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THE IRON AGE

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Reading Matter Contents..... page 1284
Alphabetical Index to Advertisers " 208
Classified List of Advertisers " 198
Advertising and Subscription Rates " 1297

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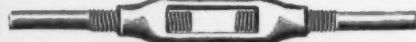
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Military Experts

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Read Page 185

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See page 57

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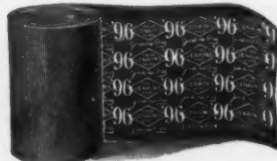
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PAGE 29



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METAL CO.
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THE IRON AGE

New York, Thursday, October 21, 1909.

Iron and Steel Manufacturers Do Honor to Chairman Gary.

A Testimonial in Recognition of His Service to the Iron Industry in the Co-operative Movement of 1908.

Judge Elbert H. Gary, chairman of the United States Steel Corporation, was the guest of honor at a dinner given by the leading iron and steel manufacturers of the country, apart from that organization, at the Hotel Waldorf-Astoria, New York, Friday evening, October 15. So stating the bare fact concerning one of the most memorable gatherings of the captains of the industry gives little idea of the singular distinction conferred upon Judge Gary by this event and the manner in which it was conceived and carried out. Some of the manufacturers who were repeatedly his guests in the months of conference and co-operation in the iron trade following the panic of 1907 proposed the dinner months ago. On Judge Gary's return from Europe, it was the thought, it would be fitting to give expression to sentiments prompted by the results of last year's remarkable movement. The event itself gave proof not only of the high intentions of his fellow manufacturers but of the fine skill applied to putting them in definite form.

The arrangements were in the hands of a committee consisting of J. G. Butler, Jr., James A. Campbell, E. A. S. Clarke, E. C. Felton, Willis L. King, C. M. Schwab, Powell Stackhouse and John A. Topping. It is only stating what is well known to say that to Mr. Clarke's labors not only the plans for the testimonial but their successful carrying out are largely due. More than 100 iron and steel manufacturers were present. The "Independent" interests were the hosts, and their guests included not only the officers and directors of the United States Steel Corporation and the presidents of the subsidiary companies, but leading railroad presidents and other friends of the guest of honor.

Written Tributes.

Charles M. Schwab presided over the after-dinner programme and was highly efficient in that capacity. Referring at the outset to the number of letters received from those who could not be present, he read the following extract from the letter of James Gayley as typical of these appreciative expressions:

"I would be glad to join with you in this greeting to Judge Gary, who has so splendidly served the iron and steel interests in this country in bringing them into friendly intercourse at a time when it was of the highest importance that they should stand together on a wiser and more sensible basis than ever existed before. In a broader sense this concentration of interests has

created a new era and set an example in manufacturing that is likely to be far reaching and, to my mind at least, has contributed greatly in making an early return to the very prosperous conditions of the iron business."

"Raw Material."

J. G. Butler, Jr., Youngstown, Ohio, responded to the first toast, "Raw Material," giving some entertaining bits from his store of reminiscence of the iron trade of earlier and later days. He enlorged the guest of the evening for "what he has done not only for the iron and steel interests of the United States but, I am safe in saying, for the whole world." The occasion of his first meeting with Judge Gary was recounted, as was another well remembered interview with the toastmaster, when the latter took just four minutes to buy 400,000 tons of Bessemer pig iron from the "Valley" furnaces.

"Basic Principles."

T. J. Drummond, president of the Lake Superior Corporation, was presented as the bearer of the Canadian steel industry's greeting to Judge Gary. He said in part, in dealing with "Basic Principles":

As I look back over the past two years, nothing strikes me so forcibly as the change in the commercial basic principles of the iron and steel trade of the United States wrought by our honored guest of this evening. I

do not speak as a Canadian now, because in matters of this kind we are all one; there is not anything that you may do that will not affect us. The old business principles were a distrust of one's competitors, the idea that to succeed yourself you must thrust out your rivals, and the solid belief that your rivals are mean enough to feel the same way towards you. As a result, when a lull in trade came or a financial panic, every man went out a-gunning and a-knifing for his competitors, each distrustful of the other, and cutting deeper into prices day by day just because he was sure the other fellow was doing the same thing. As a result of this an industrial panic ran like wildfire through the trade, and the wreckage left in its track was greater than that due to the original financial storm. The smaller concerns went down to ruin, and the stronger, which worried through to harbor, required financial experts to heal or to hide their wounds. No one benefitted by this; all suffered, manufacturer and consumer alike. But the law of distrust was our old basic principle, and we stuck to it



E. H. Gary

and knew and would know no other. So in 1907, when the panicky times came, I did not fear so much what was happening in Wall Street and in financial circles as I feared the old basic distrust, and what it would do to us.

Just when everything seemed at its blackest Judge Gary gave a dinner. And we all came sad, but hungry, even thirsty; and the Judge, after we had eaten and were feeling better, put forward a new basic principle—trust and good faith in one another. The principle can best be expressed in his own words: "I believe what is good for my competitors is good for me." This was a new doctrine, especially from the great house of the trade, because in the old days the biggest fellows were ever the most murderously inclined. And I can imagine an old timer, who had gone down to ruin in the old days, crying out, "Oh, to be in business now that Gary is there."

Around our table, notwithstanding our reverence for the teacher, still a little distrust ran, born of past and bitter experience, and some wondered what Judge Gary was after. That was, perhaps, the first feeling; but the frank good will and force of the man won all hearts, and the new basic principle swept all others aside. Trust and faith in one another leaped into life and grew stronger day by day. Those were hard times to face, but always the voice of the leader ran strong and clear. "Steady, boys, and play the game." And you played it, and played it fair, and not only in the United States, but in Canada and abroad men hold you higher in esteem to-day, and the new basic principle has come to stay.

The melancholy days have gone,
We're feeling light and airy;
We're not cussing any one,
But just a-blessing Gary.

We hear the call of increasing trade, and we are ready for it with good appetites, not as in the old days, when we were generally overlaid with cheap priced indigestible orders. We have had hard times in the past and we will have them again, and hard work, and money troubles, for 'tis the heritage of him who works in iron; but, thank God, 'tis a man's job anyway, so we face it manfully, and, trusting each in himself and in one another, the future under the new basic principle is assured.

"Gas."

Charles Kirchhoff, who was announced to speak on "Gas," pictured the feelings of the blast furnaceman, who under latter day developments finds that the furnace in whose performance year after year he has taken a pride, turns out to be only a common, everyday gas producer, while the choice pig irons which he had regarded as monuments of his life work become nothing more than an ordinary by-product. Passing from allusions to the Wall Street significance of his subject, the speaker suggested that the real problem is the control of the forces of industry—a control that is to be the fruit of long and earnest thought and labor. A great question is that of the type of men who are to lead. A French paper recently referred to the guest of the evening as a great diplomat, and the idea seemed to be conveyed that a diplomat is one who is a very dangerous man to those in the opposite camp, but all that perfection could be with his friends. Judge Gary, in the speaker's thought, had been such a diplomat.

A New Order.

In responding to the sentiment, "The Old Order Giveth Place to New," Willis L. King, vice-president of the Jones & Laughlin Steel Company, said:

This great gathering of the iron and steel industry to-night impresses me deeply. That busy men should lay aside their responsibilities and travel long distances to show their friendship and affection for a man in a purely social way, for a man who in the nature of things must be their most active and powerful competitor, is indeed remarkable, and I think without precedent. This friendship has been a matter of slow growth, for it seems that a man gives his confidence more grudgingly in business than in any other direction, and the habit of generations is not easy to put aside. But that it is

real and abiding there can be no doubt, for it has survived the troubles and vicissitudes of the past few years, and the real test of friendship is in adversity. It has broadened our horizon and given us such a clear view of duty and opportunity that we have been able, without the sacrifice of any fundamental principle, to correct and avoid much that has been unreasonable and costly in old time business methods. It is true that the law of supply and demand still governs the output and that we still have competition; but it is reasonable competition, for we have learned the folly of attempting to create a demand at the expense of profit, and bearing in mind the cost of our raw material in the ground which cannot be replaced, we refuse to give away our birth-right. It is certain that we have much to be thankful for. And first, because it is nearest to us, is this delightful gathering to-night that marks the era of friendship and good fellowship which during the past ten years has slowly but surely surrounded us even against our will. We have gotten into the habit of considering our neighbor and of putting a value on his good opinion. It is a decent habit and a great asset. Again we should be thankful that our lot has been cast in this Twentieth Century. It is called the age of steel, but may it more truly be called the golden age of endeavor and opportunity. No era in the past can compare with it. Since the beginning of the industry in Virginia in Colonial times its history has been an almost unbroken record of disappointment and disaster. Lack of capital and transportation, long credits and bad debts were too much of a handicap for the early manufacturer. His average was three good years out of ten, and he endeavored to make up in three years what he lost in seven. He had notes to pay, and knew of no way to pay them but to run his mill at any cost. Prices were either unreasonably high or low; there was no happy medium, nor indeed could there be. He was unable to reduce his cost in bad times, or increase his output in good times. A few of these men acquired a competency; the majority failed. In fact, in my recollection of the 25 or more mills in the Pittsburgh district not more than five or six managed to escape the sheriff, and some of them made his acquaintance several times. And so, happily for us, the old order of things has given way to the new.

We should be especially thankful that fate transferred our friend from the profession of the law to the honorable business of steel making. It has been a good thing for us; I trust it has been for him. In making the change he has at least escaped that opprobrious letter "a," for that letter is now obsolete in the steel industry. Yes, it has been a good thing for us, for he brought with him a judicial mind, blended with the knowledge of men and business morality, and he gave us good advice which has made for us a great deal of money. Surely, we think well of him. We respect him, too, because he practices what he preaches; he takes the same advice that he gives to others. We honor Judge Gary for that fine sense of the fitness of things which makes him respect the law and those who administer it; but I think we like him best for showing that a man may be in business, a large business, and still be a gentleman. I believe I have seen his intention of making of all of us living and speaking examples of the theory, to be seen and read of all men. It is a big undertaking, and I hope he will succeed—nay, I believe he will.

Time and words fail me, Judge Gary, to express my appreciation of what you have done for the general welfare of the steel industry and of the high standard you have set up. Your friendship during these years has been to me one of the bright spots in this prosaic world of business, and I cannot but think that it is an earnest of better things. With due acknowledgment to that group of men who formed the United States Steel Corporation on such broad lines and who have conducted it so prudently that the entire steel industry has taken on a stability heretofore unknown, and with especial acknowledgment to you, my dear Judge, I beg to tender to you on behalf of your fellow manufacturers their hearty good wishes for your welfare and to express their sincere hope that long life, happiness and

prosperity may be your portion and that you may receive the contentment that comes to one who has done what he could for his fellows.

The Presentation.

In presenting to Judge Gary a solid gold vase, which had been selected as the gift of 55 iron and steel companies, Mr. Schwab said:

I am thankful for this opportunity of saying one thing, Judge Gary. You and I were associated in business for some years. We had many differences, and I am glad of this public opportunity to say that with my bounding enthusiasm and optimism I was wrong in most instances—indeed, in all instances, and you were right. The broad principles that you brought into this business were new to all of us who had been trained in a somewhat different school. Their effect was marvelous, their success unquestioned. We feel that your position in the steel industry is unique. I have been present at many gatherings where men have been honored for scientific attainments in steel; I have been present at gatherings where men have been honored by reason of their operative ability in the manufacture of steel; but this is the first time in the history of the industry when the heads of all the great concerns in the United States and Canada have gathered to do honor to a man who has introduced a new and successful principle in our great industry. Judge Gary, you should be a very happy man to-night.

We felt that we were not showing the full feeling of our hearts by tendering you this simple dinner, but that we should add something that would be a permanent token of our esteem for your personality and your friendship. The committee having this dinner in charge has selected this beautiful gold vase, simple in its design, modest in its inscription, but carrying within its solid gold encasement the hearty good wishes, the esteem, the love of all the gentlemen, your friends, here assembled. We beg of you that you will accept this gift, and believe me when I say with all the sincerity I am capable of that every word I have uttered to-night comes from the heart and is the express sentiment of every one of the gentlemen at this board.

JUDGE GARY'S RESPONSE.

The applause following the presentation of the vase was prolonged. Judge Gary at length said:

Mr. Schwab, gentlemen: Fortunately for me, I have reduced to writing a few earnest thoughts. There are times when the tongue refuses to respond to the dictates of the heart, and I would be disingenuous if I assumed my usual composure. This gift of pure gold is typical of the kind of affection which you gentlemen have invariably shown and which is worth living for. Of course it comes to me as a total surprise. You know that. I had no intimation in regard to it until Mr. Schwab referred to the subject during the time Mr. King was speak-

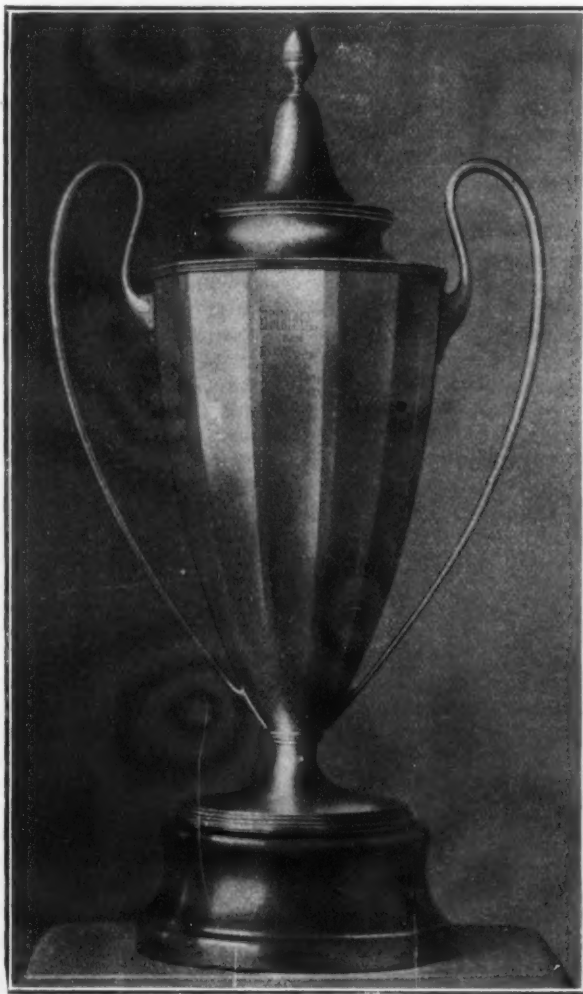
ing. I intended not to be surprised this evening at anything you might say. I knew because of the bigness of your hearts that your expressions would be kind, but somehow I had a misgiving that on this occasion I might lose my equilibrium and not be able to say anything. For almost the first time in my life since I commenced to practice law and tried to discuss questions in the courts, it seemed to me that there was a possibility of my making an entire failure. So last evening I asked my secretary to come to my apartments this morning so that I might dictate to him something to say this evening; and I am fortunate, indeed, in having this manuscript to read to you:

REPRESENTATIVE CHARACTER OF THE GATHERING.

This reception is a wonderful demonstration of personal friendly regard. In some respects it is without precedent. When it is remembered that included in those present are representatives of the producers of iron and steel aggregating annually 21,500,000 tons of the former and 22,000,000 tons of the latter, or 87 per cent. of the total iron and steel produced in the United States, and 38 per cent. of the total iron and steel produced in the world, the significance of the occasion is realized. It is no exaggeration to say that ability, skill, talent and success, as applied to the industry mentioned, are represented in this assembly to as great an extent as ever before seen at a similar gathering. The honor which you have conferred upon me should satisfy the desire and excite the pride of any man however ambitious. For many years, and particularly during the last two years, you have, without exception and without interruption, shown in every possible way a true and an abiding friendship. Notwithstanding my faults, my mistakes, my lack of understanding, you have proved patient, generous, loyal friends. I fear at times I have seemed stupid and unable to comprehend, or at least seemed to be indifferent to, your exhibitions of confidence. My intentions have been to reciprocate your kindness. I am glad because of your acquaintance and friendship. My gratitude for this mark of respect is un-

bounded. The memory of this occasion will abide in my thoughts as one of the most delightful experiences of life. You have placed me under obligations which can never be canceled. Indeed, I do not wish to cancel them. My difficulty will be in living up to a standard which will fully justify a continuance of the respect and confidence which you now entertain.

And now, having expressed recognition of your generous and undeserved bestowal of honor, not unmingled with affection, and my sensibility of personal obligation, I cheerfully acknowledge that in bringing together such a splendid representation of talent as a tribute to an individual the controlling motive is to make prominent and give emphasis to a sentiment which has been constantly in our minds during the last two years and is associated with a movement with which, by your indulgence, I have



Gold Vase, 16½ in. High, Presented to Chairman Gary and Bearing the Inscription, "Elbert H. Gary, From His Many Friends Among the Iron and Steel Manufacturers of America, the 15th of October, 1909."

been more or less identified. It is the sentiment that actual friendship may continuously be applied to competitive business.

THE DAYS OF RUINOUS COMPETITION.

In the days gone by, never to return it is to be hoped, it was a common practice for competitors in business to act in accordance with the rule that "might makes right," and on the basis that permanent success was to be reached and enjoyed only by those having the greatest strength and power or the longest purse. As a result it frequently happened that the weaker or the poorer were crushed and destroyed. A competitor was treated as a common enemy. Methods for his defeat and overthrow were used regardless of good morals or good policy. Possibly in some instances it redounded to the pecuniary advantage of a few, though even that is doubtful. Certainly it was not permanently beneficial to the general public, and, from the standpoint of good morals, was a shame and a disgrace.

Although the conditions stated may never have existed in the iron and steel business, nor the methods referred to been invoked by the managers of our line of industry, still it is safe to say there are those in this room who know by sad experience that the means employed by those in charge within the last 20 years were calculated to enforce the law of the survival of the fittest. Even within my knowledge of the business, which is brief in point of time as compared with that of others who are here this evening, it has seemed to me that business was being done by several, at least, of the manufacturers of iron and steel without regard to the rights and interests of all others. I do not, of course, assert that there was any breach of the law, or that force or violence was resorted to. But I mean that there was in some cases lack of confidence, a withholding of information, a piracy of business, and indiscriminate and reckless cutting of prices; a promise to recognize the rights of others made with no intention of fulfilling the promise; an overbearing, unfair, destructive competition which drove many out of business, kept many others on the ragged edge of existence, and brought demoralization to the industry and more or less unfavorably influenced business and financial conditions generally.

If it is claimed this is an overstatement of facts it is only necessary to carry the mind back to the time when pig iron sold for \$8.50 a ton, billets for \$12.50 a ton, and rails for \$16 a ton; when the wages of common labor were two-thirds of the present prices or less, and strikes among the men were of frequent occurrence; when mills and furnaces were idle or dismantled, and when the banker dreaded to see the steel and iron manufacturer enter the door of the bank.

In passing it is proper to say that in the long run an unreasonable, destructive competition such as I have referred to is prejudicial to the best interests of all concerned, including the manufacturer, his workmen, his customers and the general public. The reasons should be obvious, and will not be dwelt upon at this time.

CHANGES FOR THE BETTER.

During the last 10 years methods and conditions have been changed for the better. As between the gentlemen who are in control of the iron and steel industry in America at the present time there exists a most intimate relation. In your intercourse and communications you are open, frank and unreserved. In your treatment of each other you intend to be just and fair. You can witness the success and prosperity of your neighbors without the slightest feeling of envy or discomfort. You believe in competition, but not hostility; in rivalry, but not antagonism; in progress and success for all, but not in the punishment or destruction of any.

We do not advocate combinations or agreements in restraint of trade nor action of any kind which is opposed to the laws or to the public welfare. We do not expect the survival in business of any one who by reason of incompetence, dishonesty or other fault is unable to cope with his competitors in an open market and a fair field. The public interest is opposed to any arrangement which will secure the pecuniary success of any individual not

able to reach it in competition with others. What we advocate is fairness and friendship in business, cordial intercourse, confidence in each other, frankness in disclosure when information is properly requested. If it is claimed the suggestions referred to are not practical, the answer is they have been carefully considered by the gentlemen who attended this reception and dinner and have been adopted. With you they are no longer theories. In many ways and on many occasions you have personally and individually given evidence of this fact. By your decision and your action you have reached and now occupy a high place in the estimation of the entire industrial world. The magnitude of business in your charge gives you a large influence in regard to the commercial and financial condition of the country.

THE FINANCIAL LEADER IN THE PANIC OF 1907.

Only two years ago this country witnessed a sudden and severe financial cyclone. Doubt and distrust were in the minds of thousands. Not only were depositors of funds in the banks alarmed, but even banks themselves were more or less suspicious of one another. The disposition of managers of many banks seemed to be to retain the funds in their possession and to recover what they had on deposit in other banks. Currency became scarce, credit reduced, values depreciated and business stagnated. The present was dark and the future gloomy. Never before in the memory of many who are present this evening was the financial outlook so desperately bad. Under those circumstances and on that occasion there stood up in our midst a financial giant who turned his face toward the storm, and with a keen perception which pierced the clouds and saw on the other side the sun of prosperity, and with a confidence in this country and her people and a comprehension of the basic conditions and our recuperative power then decided to invite his friends to join him in providing financial assistance to the weaker or afflicted banks, and to give aid and encouragement and words of hope and cheer to the communities at large. The result you know.

The response was prompt and hearty. The necessary aid was quickly given. And when the public knew that this band of financiers, under the leadership of this great man, was in session almost literally day and night, having under most careful consideration every question which might affect the financial destiny of the country, confidence began to be restored and business slowly but surely began to return to its normal condition. I venture to suggest what you all know, that the disposition and conduct of Mr. Morgan during the trying circumstances I have mentioned were the result of his feeling of friendship for his acquaintances, his neighbors, his countrymen and humanity in general. Those who are best acquainted with him know that however big he may be mentally, he is greater when estimated by the promptings of his heart.

DANGERS TO THE IRON TRADE.

And now, in your behalf, I dare insist you are entitled to much credit for your temper, your attitude and your conduct at the time the panic of 1907 occurred and during the dark days which followed. You knew by long experience what was liable to happen in your lines of activity. You knew full well what would probably result to your business, to your customers, to your employees and to financial conditions generally if you should adopt the measures which had been pursued under the old régime. You realized that many of your customers who were carrying large stocks, purchased at prices which prevailed when existing conditions were buoyant and prospects hopeful, and who were more or less in debt at the banks, would be forced into liquidation and bankruptcy if prices should become demoralized; that immediately there would be the closing down of mills, the idleness of men, the usual labor strikes and incidental poverty and misery. You knew that the bitter and destructive competition which must follow would force many of the manufacturers themselves into insolvency. And more than this, you could see that, as your industry was recognized more or less as a barometer of trade, if you failed to keep your industrial ship afloat

and in good repair other lines would be affected and damage would result which could not be remedied for years to come.

WHAT CO-OPERATION DID.

And so by invitation you came together in the most friendly spirit, high minded, honest, frank and fair toward each other, and with a kind feeling for all who might be concerned in your action. You literally placed upon one table all evidences relating to your affairs, your methods, your interests, your conduct and your intentions. With no agreement or request on the part of any one for an agreement as to what you would do in the future, you were perfectly willing to state on all occasions and under all circumstances what you were doing. You placed every one interested in possession of all the facts necessary for his protection. Never before in the history of the country did such a large body of men with responsibilities so great ever come together and treat one another on a basis so generous, fair and high toned.

Your attitude and conduct at that time, no doubt, had much to do in allaying the fever of excitement which existed in maintaining the stability of business conditions and in securing a return of prosperity. This is evidenced by the statement of many of the leading bankers and financiers of this country. You have heard words of praise from many directions; and especially have many of your customers been grateful to you for the manner in which you protected them. Perhaps never before have business conditions in this country been better or prospects brighter than they are at the present time.

In the application of a feeling of friendship and fairness we must not be selfish nor limit the application to ourselves or the business in our charge. If it is a good doctrine for us, it is equally good for others who are more or less affected by what we do. We should have it in mind in dealing with our employees, with our customers and with the public. We must never forget that our rights and interests are and should be subservient to the public welfare; that the rights and interests of the individual must always give way to those of the public. We must not take undue advantage of the fact that great prosperity and increased demand for our products enable us to advance prices. They should always be maintained at a point within reason and justice.

RELATIONS WITH FOREIGN PRODUCERS.

And in the consideration of these questions as applied to competitors in trade we should not confine ourselves to the business men of this country. We have been very fortunate in our relations with our foreign brethren. They have been friendly, considerate and fair. It is our desire to continue the most amicable relations with foreigners, for this will result in great benefit and profit to all. There are many foreign neutral countries whose people are purchasers of our commodities which can be reached by all of the manufacturers here and abroad, but in cost of transportation much greater to some than to others.

Even without any agreement on the subject, if we are in close constant and friendly contact with our competitors abroad it is natural to distribute our products at the least expense and with the greatest benefit to all. The manufacturers of our products throughout the world are more or less dependent upon each other. As a rule prosperity for one means prosperity for all, and adversity for one means adversity for all. The foreigners have in many ways and on many occasions exhibited a disposition to foster relations with ourselves which are calculated to add materially to our progress and success. We should be willing and anxious to reciprocate in every possible way.

It is well known that the heads of the governments across the seas are quite inclined to encourage and favor the manufacturers within their domains, and to encourage them in their efforts to continue pleasant relations with their competitors in other countries. This is especially true of King Edward, Emperor William and Emperor Joseph, and perhaps other great rulers. The success and prosperity of the foreign manufacturers are due largely to the intelligent, cordial and generous encouragement and approval of their monarchs, who be-

lieve that the material growth and prosperity of the citizen is one of the essentials to progress and stability. We shall receive the same cordial support from the chief executive of this country if our attitude and conduct are such as to deserve it.

To our great advantage, we have learned much from the foreign manufacturers of iron and steel. Bitter, destructive war between nations or individuals is never justified except in defense of life or liberty or property, and then as a last resort. Nor is bitter, wrathful and destructive competition in business permissible unless it becomes necessary in self defence. There are two reasons for these conclusions: First, because they are right, and that is sufficient, and, secondly, because they are good policy, and therefore practicable and beneficial.

A MOVEMENT THAT WILL GROW.

And so I conclude by saying the controlling thought in the minds of those who are responsible for this reception and dinner will continue and grow in estimation to the great benefit of the people of this country. You have taken an advanced position and will not recede. Your influences for good will be appreciated. You are leaders in the industrial branches of human effort in this country. Where you lead others will follow. You occupy a high moral plane. Your voice in commercial and political circles will be potential. You have great responsibilities, but you will measure up to them. Your heads and your hearts are right. You will deserve and will secure the approval of all mankind.

A Further Testimonial.

James H. Hoyt of Cleveland, who was expected to respond to "Business and the Law," was absent because of illness. The toastmaster called upon E. A. S. Clarke, president of the Lackawanna Steel Company, saying that the arrangements for the banquet had fallen upon Mr. Clarke's shoulders and that all would attest their perfection and completeness. Mr. Clarke expressed pleasure at having, in the way a previous speaker had indicated, gone to school with Judge Gary. He referred to the gathering as made up of representative iron and steel manufacturers of the country, the financiers who enable them to conduct their business, and the representatives of the greatest consumers of iron and steel—the railroads. He considered such a gathering a wonderful testimony to what Judge Gary had done for the industry. Mr. Clarke then read the following expression, which had been prepared in illuminated form in a volume bearing on its cover the following from Tennyson:

Moderate, resolute,
Whole in himself, a common good.

OCTOBER 15, 1909.

JUDGE E. H. GARY:

Dear Sir: We, who have had the honor of having you and some of your friends as our guests this evening, wish to add a few words to those already spoken for us in appreciation of the fairness and of the friendly and helpful attitude you have shown toward us during the two trying years just past.

It is no small compensation for the anxieties and trials of that period to feel that, perhaps largely owing to them, we have a closer, better acquaintance with yourself and with each other, and to know that through your efforts the iron and steel manufacturers of this country stand on a higher, broader and fairer basis of business relationship.

There are few to whom it is given to accomplish such work; and none of whom the lines on the title-page of this volume, written by Lord Tennyson of the great Duke of Wellington, can be more appropriately spoken than of yourself.

May there always be some one with your wisdom and fairmindedness to counsel us.

Sincerely,

Your friends.

Several pages of the illuminated volume were taken up with the signatures of the following persons representing the 55 iron and steel companies participating in the tribute to Judge Gary:

J. M. Barr, president Woodstock Iron & Steel Company, Anniston, Ala.; Edward Bailey, president Central

Iron & Steel Company, Harrisburg, Pa.; George Bartol, general manager, Otis Steel Company, Cleveland, Ohio; Morris Bachman, president Sharon Steel Hoop Company, Sharon, Pa.; J. G. Battelle, president Columbus Iron & Steel Company, Columbus, Ohio; Frank Billings, Tod Stambaugh & Co., Cleveland, Ohio; W. L. Brown, Pickands, Brown & Co., Chicago, Ill.; Jas. A. Burden, president Burden Iron Company, Troy, N. Y.; J. G. Butler, Jr., president Bessemer Pig Iron Association, Youngstown, Ohio; J. A. Campbell, president Youngstown Sheet & Tube Company, Youngstown, Ohio; Capt. H. S. Chamberlain, president Roane Iron Company, Chattanooga, Tenn.; E. A. S. Clarke, president Lackawanna Steel Company, New York; E. S. Cook, president Warwick Iron & Steel Company, Pottstown, Pa.; T. I. Crane, president Northern Iron Company, Philadelphia, Pa.; T. J. Drummond, president Lake Superior Corporation, Montreal, Canada; H. DuPuy, chairman Crucible Steel Company, Pittsburgh; B. F. Fackenthal, Jr., president Thomas Iron Company, Easton, Pa.; E. C. Felton, president Pennsylvania Steel Company, Philadelphia; Austin Heckscher, president R. Heckscher & Sons Company, Philadelphia; Joseph H. Hoadley, president Alabama Consolidated Iron & Steel Company, N. Y.; C. R. Hubbard, president Wheeling Steel & Iron Company, Wheeling, W. Va.; A. F. Huston, president Lukens Iron & Steel Company, Coatesville, Pa.; O. N. Hutchinson, general manager Grand Crossing Tack Company, Grand Crossing, Ill.; Willis L. King, vice-president Jones & Laughlin Steel Company, Pittsburgh; I. A. Kelley, president Ashland Steel Company, Ashland, Ky.; James Lord, president American Iron & Steel Mfg. Company, Lebanon, Pa.; O. P. Letchworth, president Pratt & Letchworth Company, Buffalo, N. Y.; Price McKinney, Corrigan, McKinney & Co., Cleveland, Ohio; J. C. Maben, president Sloss-Sheffield Steel & Iron Company, Birmingham, Ala.; Cyrus H. McCormick, president International Harvester Company, Chicago; Samuel Mather, Pickands, Mather & Co., Cleveland, Ohio; Wm. G. Mather, president Cleveland-Cliffs Iron Company, Cleveland, Ohio; Benjamin Nicoll, B. Nicoll & Co., New York; Thos. K. Niedringhaus, president National Enameling & Stamping Company, St. Louis, Mo.; E. W. Oglebay, Oglebay, Norton & Co., Cleveland, Ohio; Leonard Peckitt, president Empire Steel & Iron Company, Catsauqua, Pa.; J. H. Plummer, president Dominion Iron & Steel Company, Sydney, N. S.; Veryl Preston, president Eastern Steel Company, New York; David Reeves, president Phoenix Iron Company, Philadelphia; F. B. Richards, M. A. Hanna & Co., Cleveland, Ohio; Chas. G. Roebbing, president Jno. A. Roebbing's Sons Company, Trenton, N. J.; W. A. Rogers, president Buffalo & Susquehanna Iron Company, Buffalo, N. Y.; Wallace H. Rowe, president Pittsburgh Steel Company, Pittsburgh, Pa.; C. M. Schwab, president Bethlehem Steel Company, New York; I. M. Scott, president La Belle Iron Works, Steubenville, Ohio; C. B. Shoemaker, president Glasgow Iron Company, Pottstown, Pa.; F. C. Smink, president Reading Iron Company, Reading, Pa.; W. P. Snyder, president Shenango Furnace Company, Pittsburgh; Powell Stackhouse, president Cambria Steel Company, Philadelphia; Alexis W. Thompson, president Inland Steel Company, Chicago; John A. Topping, chairman Republic Iron & Steel Company, New York; J. F. Welborn, president Colorado Fuel & Iron Company, Denver, Col.; Frank S. Witherbee, president Witherbee, Sherman & Co., New York; Howard Wood, president Alan Wood Iron & Steel Company, Philadelphia; W. P. Worth, treasurer Worth Bros. Company, Coatesville, Pa.

A Word from J. Pierpont Morgan.

Mr. Schwab, in bringing the programme to a close, spoke of the number of distinguished men present, "and one in particular who will not consent to speak." Thereupon J. Pierpont Morgan arose and said:

"Gentlemen, I wish in my power to say all that I would like to say on this occasion. What I might say at another time would be pretty poor, but to-night I am very much overcome by all that I have heard said, for Judge Gary and I have been working together now for 10 years in a way. Perhaps none of you appreciate how much it means to me. I feel as though we were all just together. It is impossible for me to say more, and I must ask you to accept my appreciation of how deeply I feel for the kind evidence of your sentiments toward me to-night. Let me ask you to excuse me from saying more."

Those in Attendance.

John W. Alexander, president National Academy of Design, Seabright, N. J.

A. F. Banks, president Elgin, Joliet & Eastern Railway Company, Joliet, Ill.; Edward Bailey; George Bartol; J. G. Battelle; W. L. Brown; Jas. A. Burden; J. G. Butler, Jr.; E. J. Buffing-

ton, president Illinois Steel Company, Chicago, Ill.; Hon. Robt. Bacon, New York; Geo. C. Boldt, Waldorf-Astoria, New York; Daniel H. Burnham, D. H. Burnham & Co., Chicago.

J. A. Campbell; E. A. S. Clarke; E. S. Cook; Edward Bailey Cook, manager Warwick Iron & Steel Company, Pottstown, Pa.; T. I. Crane; Daniel Coolidge, president Lorain Steel Company, Lorain, Ohio; Geo. G. Crawford, president Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.; Eugene B. Clark, vice-president American Sintering Company, Chicago.

T. J. Drummond; H. DuPuy; W. B. Dickson, first vice-president United States Steel Corporation, New York; James Deering, vice-president International Harvester Company, Chicago, Ill.; James Dempsey, Squire, Saunders & Dempsey, Cleveland, Ohio.

R. H. Edmonds, editor *Manufacturers' Record*, Baltimore, Md.

B. F. Fackenthal, Jr.; E. C. Felton; J. A. Farrell, president United States Steel Products Exports Company, New York; W. J. Filbert, comptroller United States Steel Corporation, New York; W. W. Finley, president Southern Railway Company, Washington, D. C.

E. H. Gary, chairman United States Steel Corporation, New York; T. W. Guthrie, president Republic Iron & Steel Company, Pittsburgh, Pa.; E. G. Grace, general superintendent Bethlehem Steel Company, South Bethlehem, Pa.

Austin Heckscher; Jos. H. Hoadley; C. R. Hubbard; A. F. Huston; O. N. Hutchinson; Edward M. Hager, president Universal Portland Cement Company, Chicago; J. A. Hatfield, president American Bridge Company of New York, New York; Samuel Hale, general superintendent Wisconsin Steel Company, Chicago, Ill.; Hon. Myron T. Herrick, Cleveland, Ohio.

Archibald Johnson, first vice-president Bethlehem Steel Company, South Bethlehem, Pa.; W. L. Jones, general manager Jones & Laughlin Steel Company, Pittsburgh, Pa.; Jonathan R. Jones, secretary and treasurer Alan Wood Iron & Steel Company, Conshohocken, Pa.

Willis L. Knight; Charles Kirchhoff, editor *The Iron Age*, New York; D. G. Kerr, second vice-president United States Steel Corporation, New York; Kemper K. Knapp, Waldorf-Astoria, New York; Severn P. Kerr, Sharon Steel Hoop Company, Sharon, Pa.; James Lord; Thomas Lynch, president H. C. Frick Coke Company, Pittsburgh; O. P. Letchworth; L. F. Loree, president Delaware & Hudson Company, New York.

G. G. McMurtry, chairman American Sheet & Tin Plate Company, New York; Chas. MacVeagh, United States Steel Corporation, New York; C. H. McCullough, Jr., vice-president Lackawanna Steel Company, Buffalo, N. Y.; Price McKinney; Samuel Mather; Robt. Mather, chairman Westinghouse Electric & Mfg. Company, New York; Frank A. Munsey, Munsey Publishing Company, New York.

Benjamin Nicoll; Thos. K. Niedringhaus, president National Enameling & Stamping Company, St. Louis, Mo.

Leonard Peckitt; John A. Penton, *Iron Trade Review*, Cleveland, Ohio; Veryl Preston; W. P. Palmer, president American Steel & Wire Company, Cleveland, Ohio.

David Reeves; John Reis, assistant to president United States Steel Corporation, New York; C. S. Robinson, vice-president Youngstown Sheet & Tube Company, Youngstown, Ohio; J. V. W. Reynolds, vice-president Pennsylvania Steel Company, Steelton, Pa.; F. B. Richards, Cleveland, Ohio; Karl G. Roebbing, Jno. A. Roebbing's Sons Company, Trenton, N. J.; W. A. Rogers; Wallace A. Rowe; James G. Roe, general superintendent Glasgow Iron Company, Pottstown, Pa.

Arthur J. Singer, assistant to president Lackawanna Steel Company, New York; C. M. Schwab; I. M. Scott; F. C. Smink; Powell Stackhouse; H. H. Stambaugh, president Biwabik Mining Company, Youngstown, Ohio; Edward Shearson, Shearson, Hamill & Co., New York.

Alexis W. Thompson; John A. Topping; Richard Trimble, secretary and treasurer United States Steel Corporation, New York; Moses Taylor, vice-president Lackawanna Steel Company, New York; Frank Tenney, assistant to president Pennsylvania Steel Company, Philadelphia.

F. D. Underwood, president Erie Railway Company, New York.

Frank S. Witherbee; W. R. Walker, assistant to president United States Steel Corporation, New York; W. L. Ward, Russell, Birdsall & Ward Company, Port Chester, N. Y.; W. P. Worth; Major-Gen. Leonard Wood, commander-in-chief United States Army, Governor's Island, New York; W. H. Whiteside, president Allis-Chalmers Company, Chicago.

Chas. H. Zehnder, vice-president Scranton Bolt & Nut Company, New York.

Directors of United States Steel Corporation: Wm. Edenborn, Norman B. Ream, Jas. H. Reed, P. A. B. Widener, Edmund C. Converse, J. Pierpont Morgan, Thos. Morrison, Geo. W. Perkins, Geo. F. Baker, John F. Dryden, Daniel G. Reid, Henry Phipps.

Among invited guests who were unable to be present were W. E. Corey, W. C. Brown, George F. Baer, Frank Billings, T. J. Bray, H. Coulby, A. C. Dinkey, H. G. Dalton, Thomas A. Edison, John Fritz, H. L. Haldeman, Leonard C. Hanna, D. R. Hanna, B. F. Jones, Jr., Hon. Franklin D. Locke, W. J. Olcott, E. W. Pargny, Charles S. Price, W. B. Schiller, James M. Swank, E. B. Thomas, W. H. Truesdale, F. W. Wood, August Ziesing, Henry C. Frick, John D. Rockefeller, Jr., William H. Moore, Charles Steele.

Titaniferous Iron Ore Smelting at Bethlehem.

In *The Iron Age* of October 14 brief reference was made in the article "A Great Adirondack Iron Ore Deposit" to a test of Tahawus iron ore by the Bethlehem Steel Company under the direction of Charles A. Buck, general superintendent. The following report of this test was received from Mr. Buck too late to be incorporated in the article:

"I append herewith a statement giving the experience we have had with reference to the smelting of Tahawus titaniferous ore. The trial was on rather a small tonnage, but the conclusions were quite positive.

"The Bethlehem Steel Company smelted about 600 tons of this ore in one of its 70-ft. furnaces at South Bethlehem during May and June, 1907. Complete analysis of the ore is as follows:

Per cent.		Per cent.	
Fe ₂ O ₄	70.81	MnO	0.19
SiO ₂	3.17	Al ₂ O ₃	3.74
P ₂ O ₅	0.09	CaO	Trace
SO ₂	0.23	MgO	2.92

Per cent.		Per cent.	
Fe	51.26	Mn	0.15
P	0.04	Ti	11.82
S	0.095		

"The following mixture of ores was used in the blast furnace from May 29 to June 3: 1-12 Tahawus ore, 10-12 Cuban ore, 1-12 manganate ore. The analyses showing the titanium in the slag and pig iron are as follows:

Date.	Per cent.		Analysis of pig iron.				
	Ti in pig iron.	TiO ₂ in slag.	Mn.	P.	S.	Si.	
May 29.....	Trace	1.62	0.97	0.100	0.050	1.25	
May 30.....	Trace	1.84	0.83	0.097	0.050	0.75	
May 31.....	Trace	1.95	0.94	0.098	0.045	1.86	
June 1.....	Trace	1.47	0.94	0.096	0.047	1.70	
June 2.....	Trace	1.80	0.96	0.085	0.043	2.09	
June 3.....	Trace	1.91	0.84	0.088	0.032	1.96	
Average.....	Trace	1.76	0.88	0.094	0.044	1.43	

"On June 4 the charge was changed to the following mixture: 2-12 Tahawus ore, 9-12 Cuban ore, 1-12 manganate ore. The analyses showing the titanium in the slag and pig iron are as follows:

Date.	Per cent.		Analysis of pig iron.				
	Ti in pig iron.	TiO ₂ in slag.	Mn.	P.	S.	Si.	
June 4.....	Trace	1.86	0.78	0.088	0.07	1.48	
June 5.....	Trace	3.06	0.94	0.089	0.05	1.12	
June 6.....	Trace	2.84	0.45	0.078	0.04	0.47	
June 7.....	Trace	2.51	0.78	0.091	0.045	1.10	
June 8.....	Trace	2.00	0.97	0.065	0.04	1.22	
June 9.....	Trace	1.22	0.96	0.096	0.05	1.19	
June 10.....	Trace	0.57	0.96	0.098	0.039	1.93	
Average.....	Trace	2.01	0.82	0.086	0.048	1.21	

"The fuel used in the furnace was three-quarters coke and one-quarter anthracite, and all calcite was used as a flux.

"In the above mixtures no change was made in the burden of the furnace when replacing the Cuban ore with the Tahawus ore. The slag produced was apparently more fluid than had been noted in the furnace for the previous weeks under the same burdens, fuel and lime fluxes, so that there is no apparent evidence of a more refractory or infusible slag with the use of the titaniferous ore. It is to be noted that the titanium enters the slag, but only a trace of titanium was found in the pig iron. From the conclusions that were reached in smelting the ore, there will be no difficulty in smelting an ore of this chemical composition."

Titaniferous Ore in Puddling and Blast Furnaces.

BY J. B. NAU, NEW YORK.

In the very interesting article in *The Iron Age* of October 14 on "A Great Adirondack Iron Ore Property," mention is made of the excellent results obtained by R. H. Lee, now furnace manager at Lebanon, Pa., in the treatment of titaniferous ores in the blast furnaces of the Colorado Fuel & Iron Company at Pueblo, Colo. In *The*

Iron Age of September 10, 1903, the writer had occasion to publish an article on ferrotitanium, in which he mentions the use by him of titaniferous ores in the only blast furnace then running at the works of the Colorado Coal & Iron Company at Pueblo, of which he was general superintendent in the years 1889 and 1890. At that time there existed at the plant a large, very much shunned pile of titaniferous ore, which no doubt was the same that Mr. Lee treated in the blast furnace later on.

The writer, although well acquainted with the detestable reputation enjoyed by titanic iron ore as a blast furnace material, decided, when starting up the puddling department, months before the blast furnace was put in operation, to use this ore as fettling in the puddling furnaces, ready to throw it out at the very moment it showed its ugly disposition in affecting fusibility of slag. But the puddle cinder thus obtained was invariably very liquid at the relatively low temperature that prevails in this class of furnaces, and this in spite of the fact that its titanic acid content ran invariably in the neighborhood of 10 per cent. We ran the furnaces for months with the same fettling.

Encouraged by the good results and the perfectly liquid cinder obtained in the puddling furnace, we decided, some time after the blast furnace was started, to use this puddle cinder in the furnace burden to the extent of 25 per cent., thus obtaining an average burden in the blast furnace containing from 2 to 2½ per cent. of titanic acid. This practice was kept up for a run of some four to six weeks, when the supply of puddle cinder was worked up. During that time no difficulties attributable to the use of titanic cinder were encountered, but the Bessemer iron obtained was invariably of remarkably good quality, so much so that it attracted general attention. It was of a slightly bluish color, and so resistant that it seemed to bend under the repeated blows of the hammer before it could be broken. It was used in the foundry and in the manufacture of steel, and the rails obtained from it were of superior quality.

Detroit Convention of the American Foundrymen's Association.

The committee appointed on behalf of Detroit foundry and foundry supply interests to arrange for the convention of the American Foundrymen's Association in that city in 1910 had a meeting October 12 at Detroit with the officers of the Foundry and Manufacturers' Supply Association. The Detroit committee presented its proposal for handling the convention, offering as a meeting place the fair grounds located on Woodward avenue. The time most suitable to the local committee, it was stated, is the week opening May 30, but the dates have not yet been definitely determined. A trip was made to the fair grounds and the representatives of the foundry supply interests expressed approval of the site, though final decision waits on the arrangement of some matters pertaining to *café* service. The completion of the arrangements was left in the hands of President F. N. Perkins of the Foundry and Manufacturers Supply Association, to co-operate with the local committee.

A number of entertainment features are proposed, including a boat ride on the Detroit River for all attendants at the convention, a smoker for the men, a drive about the city and a theater party for the ladies. Frank T. F. Stephenson is chairman of the Detroit general committee and his associates are the following chairmen of subcommittees: Frederic B. Stevens, Finance Committee; Joseph J. Wilson, Plant Visitation Committee; James S. Keightley, Reception Committee; W. P. Putnam, Convention Sessions Committee; Melvin Henry, Ladies Theater Party and Sight Seeing Committee; E. J. Woodison, Smoker and Get-Together Entertainment Committee; Oliver Phelps, Boat Ride Committee.

The Detroit Foundrymen's Association, which was active in securing the convention for Detroit, has as its president Arthur T. Waterfall, who is also president of the American Foundrymen's Association for the present year.

Chicago's Machinery Exhibition Warehouse.

An Enterprise of Special Interest to the Machinery Trade.

An organization incorporated under the title of Machinery Exhibition Warehouse, of which F. E. Pfannmueller of the Pfannmueller Engineering Company is president, is erecting a building, now nearly completed, at the southeast corner of Thirty-seventh street and Ashland avenue, Chicago, Ill. It is the first building erected in Chicago for the express purpose of furnishing suitable accommodations to machinery manufacturers and dealers for the warehousing and handling of their product, and at the same time providing space and convenient facilities for exhibiting and demonstrating. As far as the organizers in this project are aware it is the only building of the kind in the country. In recent years a large number of machinery warehouses have been erected in

for unit subdivision to supply, for a moderate rental, any desired space, making it well adapted to serve the purpose for which it was designed. It is 100 ft. wide by 400 ft. long, with a three-story front of stone and vitrified shale brick facing on Ashland avenue. The rear and side walls are also of brick, but the interior construction, including main floor, balcony floors, columns, crane girders and roof over balconies are constructed of reinforced concrete.

A view in the partly completed building is given in Fig. 1. Running the entire length of the building, as shown in the plan, Fig. 2, and the cross sectional elevation, Fig. 3, is a central bay 50 ft. wide by 40 ft. high, which is spanned by a 25-ton Alliance crane equipped with a 6-ton auxiliary. On either side of this space are storage compartments on the ground and balcony floors. Massive concrete columns 20 ft. apart support the second or balcony floor, the roof and crane girders. On the ground floor, underneath the balcony, are unobstructed spaces 20 x 25 ft. between the columns which can be partitioned off if desired into rooms of 500 ft. each, thus affording exclusive space for individual storage and ex-



Fig. 1.—A View in the Machinery Exhibition Warehouse in Course of Construction.

the outlying districts of the city by manufacturers and dealers whose business is of magnitude sufficient to warrant such investment. For branch establishments and smaller concerns, however, the expense involved in the construction and maintenance of properly equipped plants of this nature is prohibitive. Lack of trackage connections and handling conveniences in the central portion of the city, where most of the machinery salesrooms and warehouses are located, particularly machine tool lines, necessitates large expenditures for cartage and hand moving of heavy machinery in and out of store. Space in congested centers is very valuable and the accommodations offered are not infrequently of makeshift character. Some compensating advantage, it is true, is occasionally found in the grouping of kindred lines in a certain district, making it a distinctive machinery center. This was the case in Chicago prior to the partial disintegration of Machinery Row, caused by railroad improvements which necessitated the removal of many such interests to other parts of the city.

Out of requirements seemingly indicated by such existing conditions grew the idea embodied in the Machinery Exhibition Warehouse. The building is arranged

to facilitate the handling of heavy machinery on the first floor under the balconies eye bolts are anchored in the brick side walls at intervals of 10 ft. Means are thus provided for attaching block and tackle to be used in connection with the crane for pulling heavy machinery to and from these spaces.

The balcony bays, which extend the full length of the building, are 25 ft. wide and are entirely unobstructed. These floors, projecting 5 ft. on either side, form a gallery or passageway along the outer side of the columns and also enable the crane to serve the balcony spaces. When completed the gallery will be guarded by an iron railing which will have movable sections in front of each space to admit the passage of goods in and out. The roof over the central bay is covered with Federal concrete tile supported on 54-ft. span steel trusses. The building will receive daylight from all four sides through closely spaced windows opening into each section; the lighting effect will be further enhanced by a coating of white paint with which the interior will be finished. The structure is wired throughout for electric lights, each space of the storage divisions being supplied with such illumination. The system includes switch connections in

each section through which electricity can be supplied for the operation of individual motors, so that practical operation of machinery may be demonstrated.

Entering the building at the rear is a private switch track from the Chicago Junction Railway, which connects with all railroads and boat lines entering Chicago. The handling equipment and shipping facilities are here so combined as to minimize the cost of incoming and outgoing freight. No shipping charges are incurred on carload shipments, either in or out, and on less than carload shipments aggregating 6000 lb. or more going out of Chicago a local car will be in daily service in the warehouse and material will be transferred to any railroad in Chicago without extra charge. This arrangement will eliminate all cartage charges as well as the frequent annoying and expensive delays incident to transfer by teaming. Security of contents is assured by the fact that the structure is practically fireproof. In the rear of the

A Bethlehem Steel Corporation Note Issue.

A special meeting of the Bethlehem Steel Corporation will be held November 5, in Newark, N. J., to authorize the pledging of securities of subsidiary companies to secure \$7,500,000 6 per cent. five-year notes of the Bethlehem Steel Company. It is understood that the issue has been sold to the Mercantile Trust Company, the Equitable Trust Company and Hallgarten & Co. Concerning the purposes of the note issues, President Charles M. Schwab makes the following statement to stockholders:

I have spent the past year in the works of the Bethlehem Steel Company, in the success of which I am so deeply interested. During that period my associates and I have carefully studied the entire plant and its business, with a view to making it thoroughly modern and profitable. To accomplish this purpose, we have outlined plans to carry out which we need the co-operation of our stockholders.

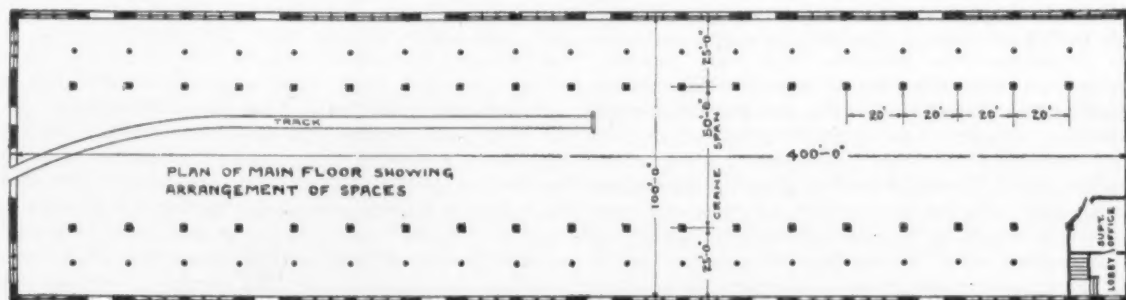


Fig. 2.—Floor Plan of the Machinery Exhibition Warehouse.

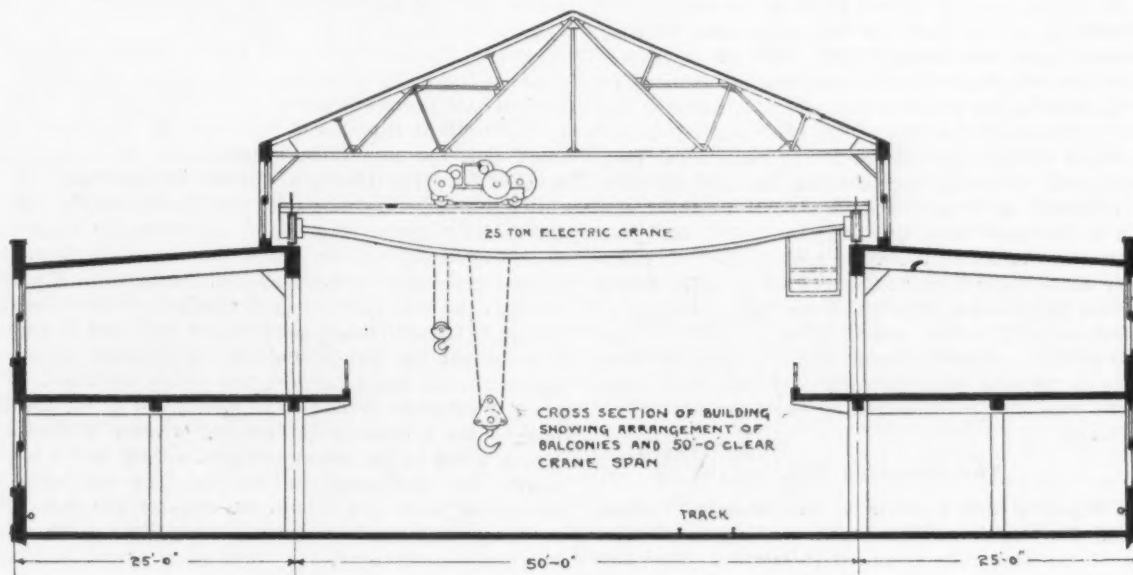


Fig. 3.—Transverse Sectional Elevation of the Building.

building is a paved and inclosed yard, 100 x 160 ft., available for the storage of rough machinery and metal products which do not necessarily require cover.

Extending across the entire front of the structure is a space 20 ft. deep and 20 x 50 ft. on the third floor, which will be occupied by the company's offices. Windows in the hallway at the rear of the offices overlook the interior of the warehouse. All modern conveniences have been supplied in every department of the plant, including steam heat, shower baths and other toilet arrangements, telephone switchboard with several trunk lines, &c.

Plans for the building were prepared by A. L. Alschuler, architect, and Johnson corrugated bars were used in the concrete reinforcement. It is expected that the structure will be fully completed and ready for occupancy by November 1, 1909.

The J. S. McCormick Company, Pittsburgh, dealer in foundry supplies, has acquired the general foundry supply business of John A. Meighan, 1642 Second avenue, Pittsburgh.

The success of our open hearth rail mill and the structural mills for "special Bethlehem shapes" is assured beyond any doubt. We have now decided upon a plan for doubling their output, for providing pig iron for the increased capacity, and at the same time securing more economical operation. We have reached our decisions, but only after mature and very careful consideration of all the conditions; \$5,000,000 is the amount required.

For the purpose of providing this money, as well as of retiring the Bethlehem Steel Company's existing issue of \$2,500,000 6 per cent. gold notes, arrangements have been completed with New York bankers by which they are to purchase an issue of \$7,500,000 five-year 6 per cent. notes of the Bethlehem Steel Company. It is proposed that the Bethlehem Steel Corporation guarantee these notes and, as security therefor, pledge its holdings of the capital stock of subsidiary companies.

I may add that the works of the Bethlehem Steel Company are now being successfully and profitably conducted, and I believe that the profits will be very greatly increased as the result of the improvements which will be made by the proposed note issue.

The plant improvements contemplated by the Bethlehem Steel Company were described in *The Iron Age* of September 30.

The Greatest Steel Plant in the World.—V.

The Billet Mill at the Gary Works of the Indiana Steel Company, Subsidiary of the United States Steel Corporation.

(With Supplement.)

In the progressive construction of the Indiana Steel Company's works at Gary, Ind., the latest development is the completion of the billet mill, which, with the rail mill, comprises at the present time the full active finishing capacity of the plant. After a period of intermittent service covering the trying out stage, which began about the middle of August, this mill is now fairly started on regular rolling schedules.

Built on a scale of magnificent proportions, unhampered in design by need of economizing space, and supplied in all details of its equipment with every improvement suggested and approved by modern engineering skill, this mill is no less remarkable or interesting than the rail mill, a description of which appeared in *The Iron Age* April 4, 1909. Like that gigantic installation, this producer of semifinished product is easily the largest of its kind ever built; it is a strictly straightaway mill, made up of 9 stands of tandem rolls and 12 stands of pure continuous rolls. Likewise, it includes as a marked feature of its design the same universal application of electricity as a means of motive power, which, with the sole exception of a steam driven flying shear in the 18-in. continuous mill, drives all of its machinery.

Paralleling the rail mill on the north side, with an intervening space between of 512 ft., available as a storage yard, the billet mill extends from, and at right angles with, the soaking pit building into which it opens at the east end. Constructed of steel, with brick walls and roof prepared for tile but now covered with corrugated steel, the billet mill structure includes the mill proper, 84 x 930 ft.; a motor house at the north end, 64 x 630 ft., and another on the south side, 49 x 175 ft. The general plan of this mill, or series of mills, is shown in Fig. 1. Parts of it are shown on a larger scale in Figs. 2 to 5. Ample head room is provided throughout for the operation of overhead traveling cranes, which span the entire length of each section. Three Alliance cranes, one of 40 tons and two of 20 tons capacity each cover the main mill floor, the two motor houses being each served by one 50-ton crane.

The Blooming Mill.

The blooming mill consists of four stands of 40-in. rolls and five stands of 32-in. rolls, making in all nine stands of two-high rolls arranged in tandem. The first four stands, through which the initial passes of ingot are made, are identical in design and construction with the first four stands of the rail mill. They are, however, run a little faster than the latter, the first two stands turning at a speed of 7-10 rev. per min., and the second at 14-20 rev. per min., as against 6-10 and 10-15 rev. per min. of the corresponding rail mill trains. In the four passes through these mills the 20 x 24 in. ingot, weighing about 8000 lb., which is given a turn at each pass, is broken down to a 11½ x 14½ in. bloom. A view of this mill is given in Fig. 6 in the supplement herewith.

On emerging from the last pass in these rolls, the bloom is run into a turntable, located in the runway between the 40 and 32 in. mills, its function being to give the piece a quarter turn on its horizontal axis, at the same time turning it end for end for the purpose of reducing, as far as possible, the crop end losses due to rolling. The turntable consists of a circular cast steel platform, in the center of which is a flat bottom troughlike recess into which the bloom drops as the table rises. A row of three goads engages one side of the bloom as it falls, thus turning it on edge in the trough. Having risen high enough to allow the ends of the piece to clear the table and side guards, a worm and wheel arrangement driven by an electric motor revolves the table, turning the bloom

end for end, after which the turntable drops to its normal position, leaving the piece upon the conveyor roll. The lifting of the table is accomplished by a 25-hp. Crocker-Wheeler mill type motor geared to a crank, through which, by means of a connecting rod and system of levers, the table is operated. A compensating counterbalance is effected by an ordinary weight and lever balance. The table and its supporting spindle are cooled by water injected through a pipe which throws a stream into the hollow casting when the table is down. Both spindle and worm wheel run in an oil bath and are carefully protected from scale, a provision that has been given minute attention in all parts of the design.

It is quite obvious that when the table is in its raised position a following piece coming through the rolls would strike the spindle and cause serious damage. To obviate this danger it became necessary to devise a positive safeguard. As first installed, the means chosen for the accomplishment of this purpose consisted of a vertical moving stop, operated by the turntable, and so placed before the rolls that when the table is up the entrance to the fourth roll pass would be closed, making it impossible to run a piece through. The mechanism for the raising and lowering of this stop consisted of a wire rope conducted through a series of pulleys and wound upon a drum operated by a table motor, the whole being so arranged that the roll opening would be closed and opened as the table is raised and lowered. It was found, however, that the protection sought could be more simply secured by direct electrical control through the two motors operating the table rolls and the turntable. By an interlocking system the motor operating the table rolls is automatically cut out when the turntable rises, thus affording absolute security against the passage of a piece through the mill rolls when the table is in this position. Owing to its simplicity, positiveness and ease of control, this system has supplanted the mechanical device designed for the same purpose and above described. Still another contingency had to be considered in the installation of the turntable. If for any reason it should be struck when in its lowest position, a very heavy impact might still endanger the spindle. To minimize the chances of such an accident, the table proper is attached to the spindle by four comparatively light bolts, which would shear off before the lower parts would be dangerously strained.

After leaving the turntable the bloom is delivered to the 32-in. mill, shown in Fig. 7 in the supplement, in which it is given from two to five passes according to the extent of reduction in size required. One pass is given in each of these stands which are arranged in tandem. The first two stands of the 32-in. group are supplied with only two passes in each, one at either end of the roll, the middle being left full diameter in order to maintain maximum strength. The bloom is guided to the pass desired by a switch running from the side guards to the mill guides. In its passage through these two stands the piece is broken down to either a 9 x 11 in. or a 9½ x 11½ in. bloom according to the passes used. The next three stands are provided with three passes each, the middle one being a blank large enough to clear the 9½ x 11½ in. bloom; so that by switching to the blank pass the reduction of the piece may be stopped after any given pass in these rolls. Billets or blooms may thus be finished on this mill in sizes ranging from 9½ x 11½ in. to 7 x 7 in. If after leaving this mill no further reduction is required, the piece is shifted from the live roll table leading to the 24-in. mill to a bed fitted with chain transfer, by which it is carried to a roller table parallel with the first. From here it goes to a 10 x 10 in. motor

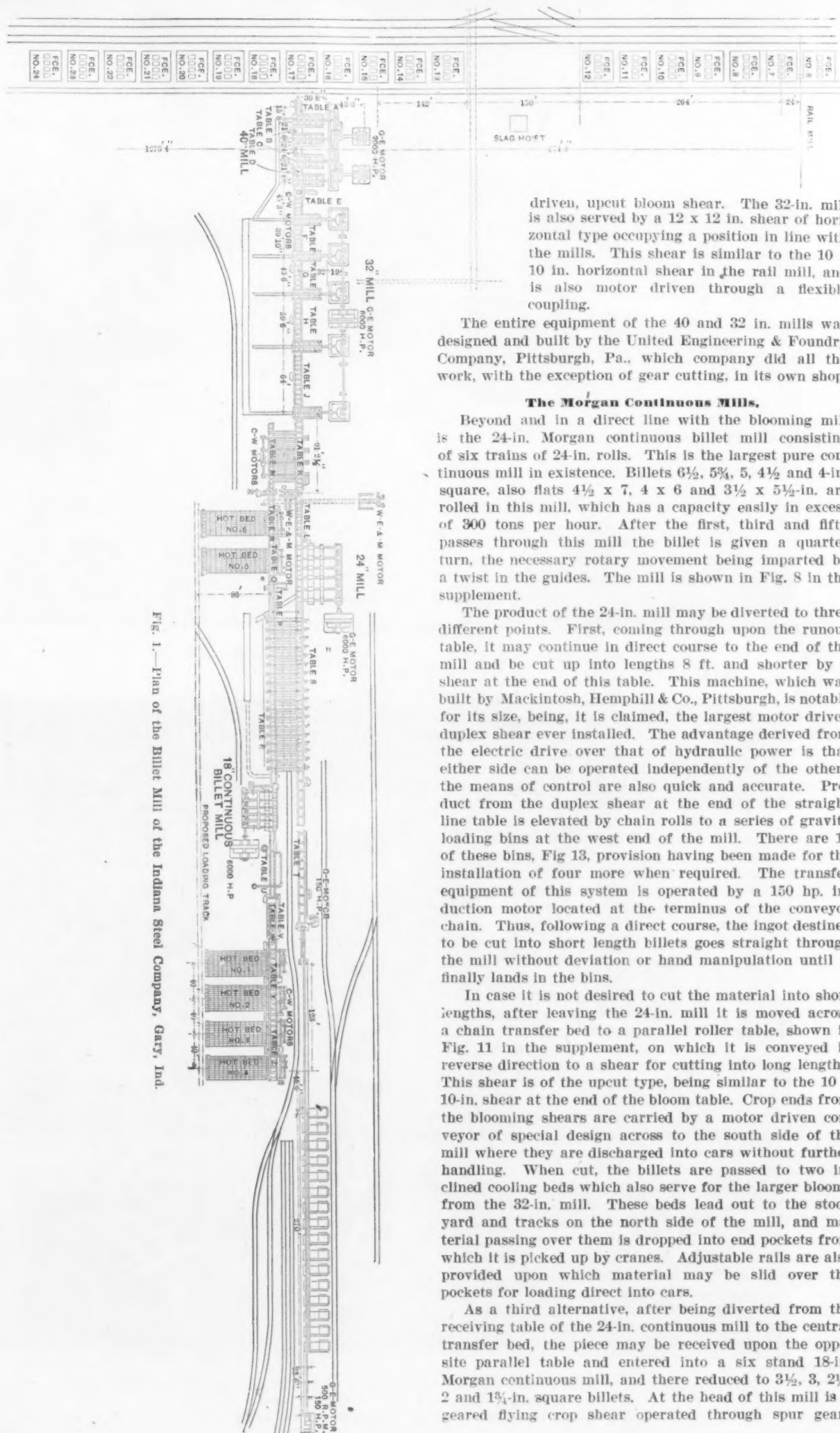


FIG. 1.—Plan of the Billet Mill of the Indiana Steel Company, Gary, Ind.

driven, upcut bloom shear. The 32-in. mill is also served by a 12 x 12 in. shear of horizontal type occupying a position in line with the mills. This shear is similar to the 10 x 10 in. horizontal shear in the rail mill, and is also motor driven through a flexible coupling.

The entire equipment of the 40 and 32 in. mills was designed and built by the United Engineering & Foundry Company, Pittsburgh, Pa., which company did all the work, with the exception of gear cutting, in its own shop.

The Morgan Continuous Mills.

Beyond and in a direct line with the blooming mill is the 24-in. Morgan continuous billet mill consisting of six trains of 24-in. rolls. This is the largest pure continuous mill in existence. Billets $6\frac{1}{2}$, $5\frac{3}{4}$, 5 , $4\frac{1}{2}$ and 4-in. square, also flats $4\frac{1}{2} \times 7$, 4×6 and $3\frac{1}{2} \times 5\frac{1}{2}$ -in. are rolled in this mill, which has a capacity easily in excess of 300 tons per hour. After the first, third and fifth passes through this mill the billet is given a quarter turn, the necessary rotary movement being imparted by a twist in the guides. The mill is shown in Fig. 8 in the supplement.

The product of the 24-in. mill may be diverted to three different points. First, coming through upon the runout table, it may continue in direct course to the end of the mill and be cut up into lengths 8 ft. and shorter by a shear at the end of this table. This machine, which was built by Mackintosh, Hemphill & Co., Pittsburgh, is notable for its size, being, it is claimed, the largest motor driven duplex shear ever installed. The advantage derived from the electric drive over that of hydraulic power is that either side can be operated independently of the other; the means of control are also quick and accurate. Product from the duplex shear at the end of the straight line table is elevated by chain rolls to a series of gravity loading bins at the west end of the mill. There are 16 of these bins, Fig 13, provision having been made for the installation of four more when required. The transfer equipment of this system is operated by a 150 hp. induction motor located at the terminus of the conveyor chain. Thus, following a direct course, the ingot destined to be cut into short length billets goes straight through the mill without deviation or hand manipulation until it finally lands in the bins.

In case it is not desired to cut the material into short lengths, after leaving the 24-in. mill it is moved across a chain transfer bed to a parallel roller table, shown in Fig. 11 in the supplement, on which it is conveyed in reverse direction to a shear for cutting into long lengths. This shear is of the upcut type, being similar to the 10 x 10-in. shear at the end of the bloom table. Crop ends from the blooming shears are carried by a motor driven conveyor of special design across to the south side of the mill where they are discharged into cars without further handling. When cut, the billets are passed to two inclined cooling beds which also serve for the larger blooms from the 32-in. mill. These beds lead out to the stock yard and tracks on the north side of the mill, and material passing over them is dropped into end pockets from which it is picked up by cranes. Adjustable rails are also provided upon which material may be slid over the pockets for loading direct into cars.

As a third alternative, after being diverted from the receiving table of the 24-in. continuous mill to the central transfer bed, the piece may be received upon the opposite parallel table and entered into a six stand 18-in. Morgan continuous mill, and there reduced to $3\frac{1}{2}$, 3, $2\frac{1}{4}$, 2 and $1\frac{3}{4}$ -in. square billets. At the head of this mill is a geared flying crop shear operated through spur gears

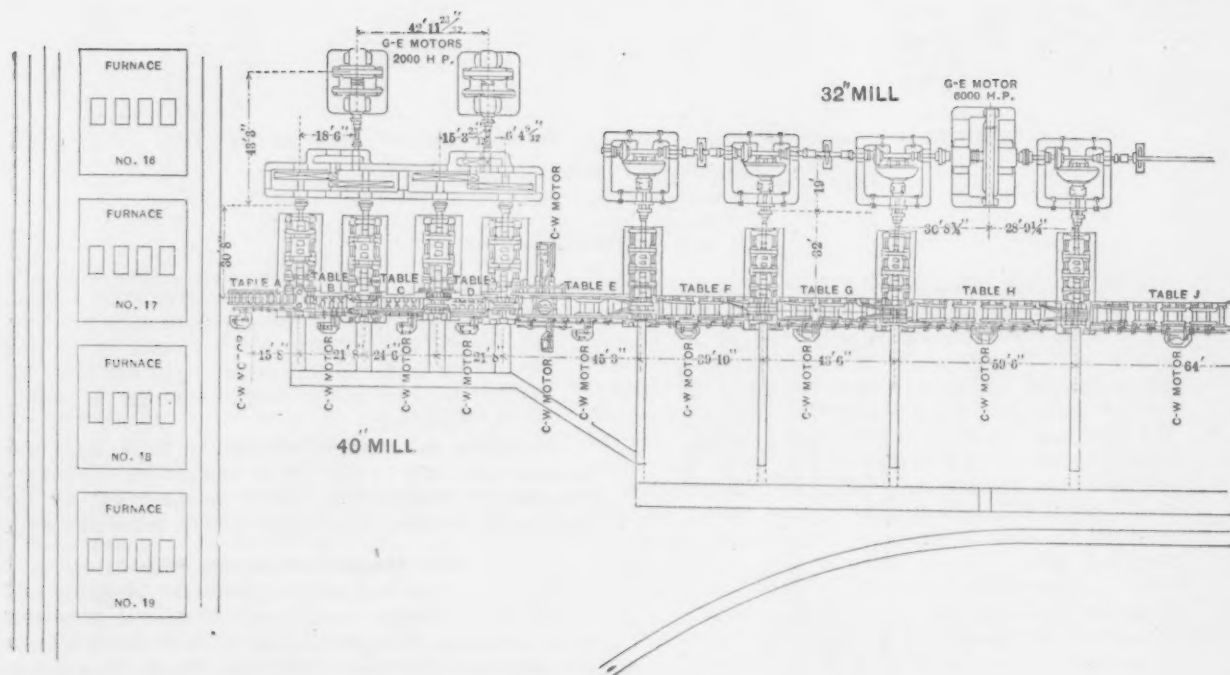


Fig. 2.—The 40 and 30 In. Mills Shown on a Larger Scale Than in Fig. 1.

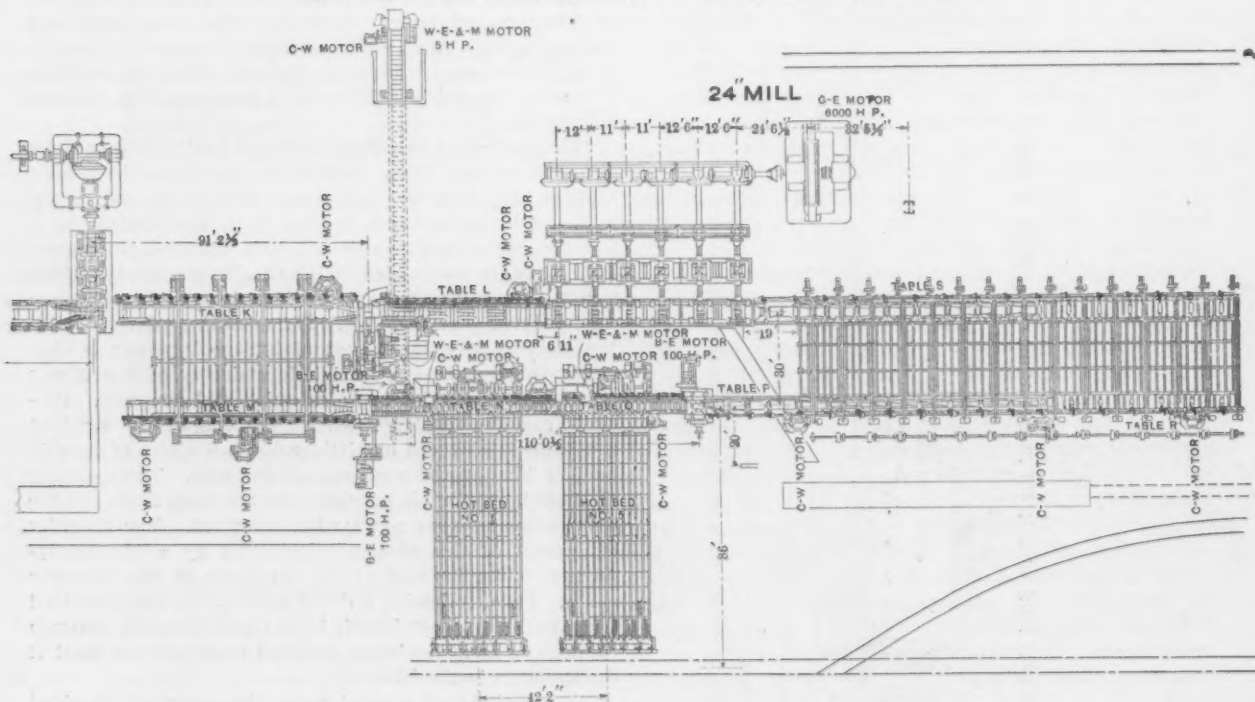


Fig. 3.—The 24-In. Mill Shown on a Larger Scale Than in Fig. 1.

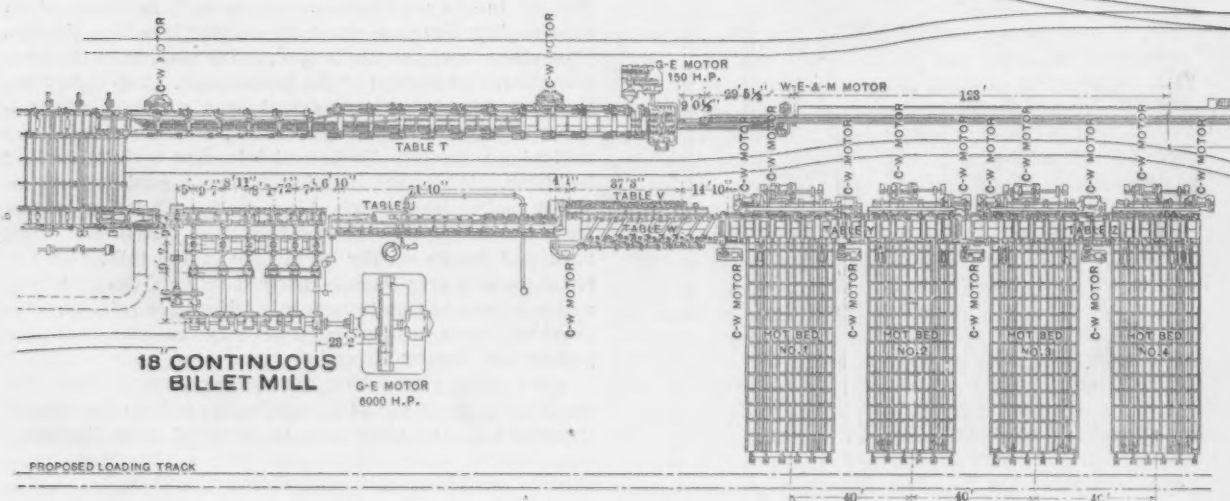


Fig. 4.—The 18-In. Mill Shown on a Larger Scale Than in Fig. 1.

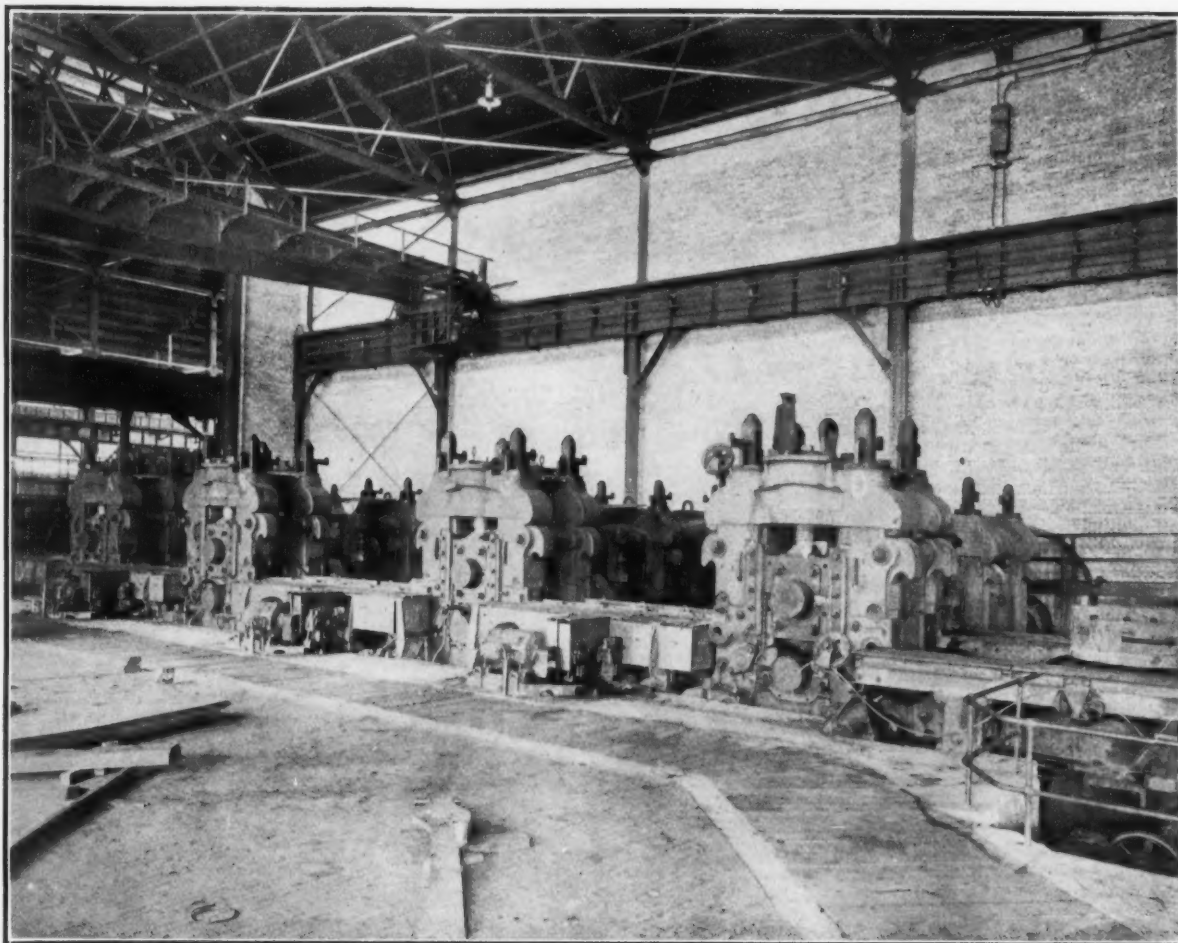


Fig. 6. The 40-Inch Blooming Mill.

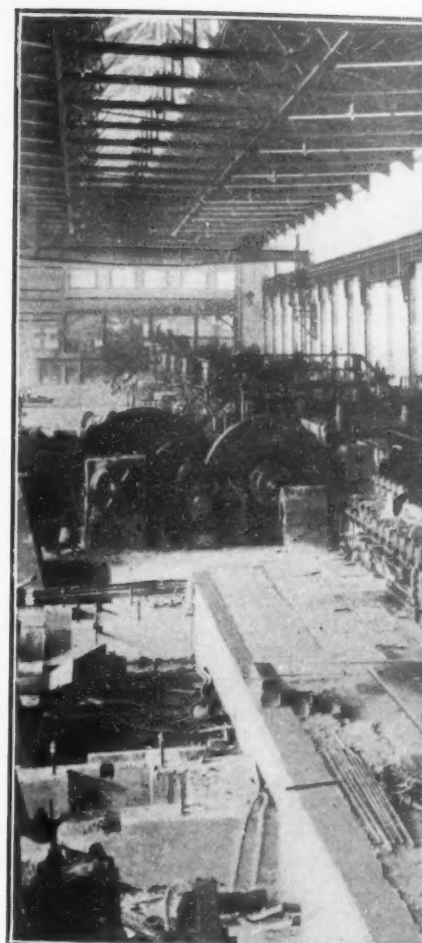


Fig. 8. The 24-Inch Co

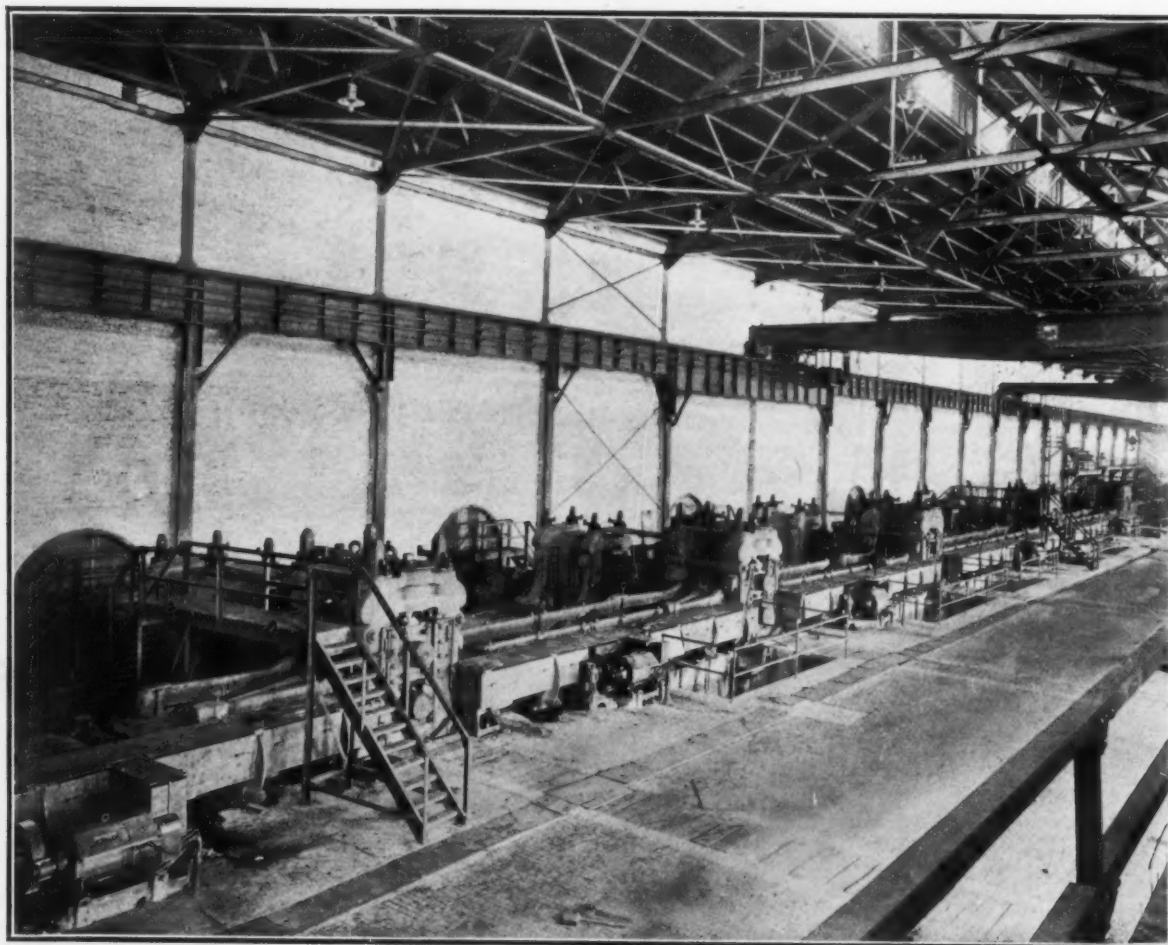


Fig. 7. The 32-Inch Blooming Mill, Looking Toward the Finishing End.

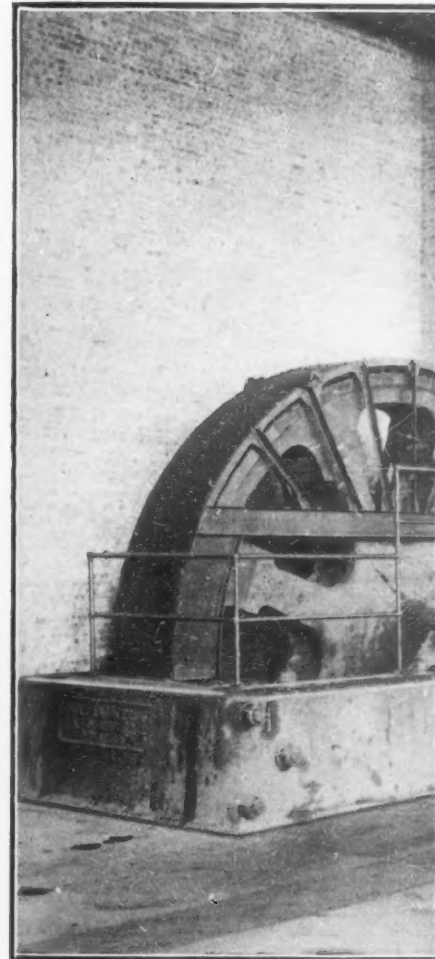


Fig. 9.

VIEWS IN THE BILLET MILL OF TH

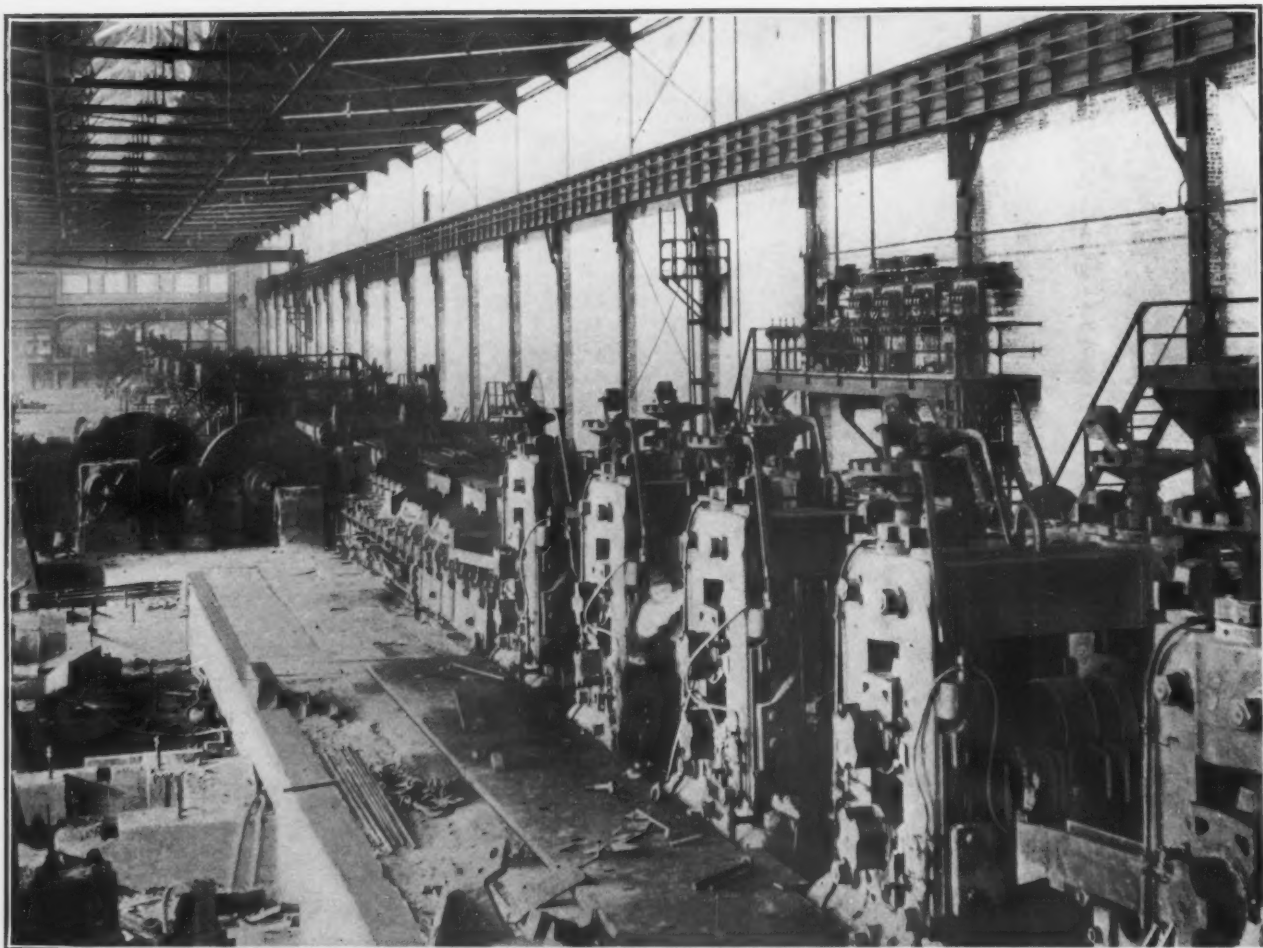


Fig. 8. The 24-Inch Continuous Mill, Showing the Blooming Mills in the Distance.

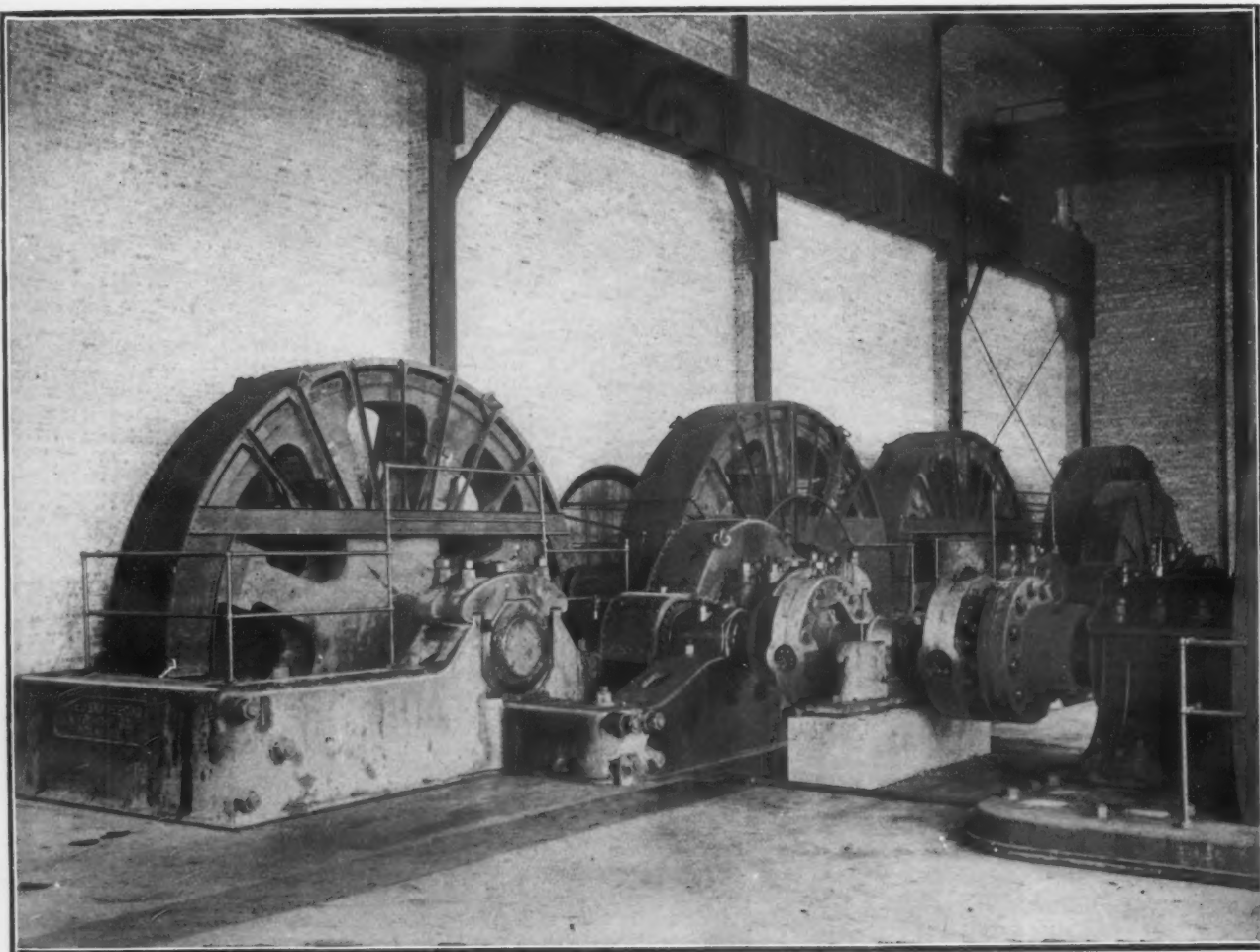


Fig. 9. Driver for the 40-Inch Blooming Mill.

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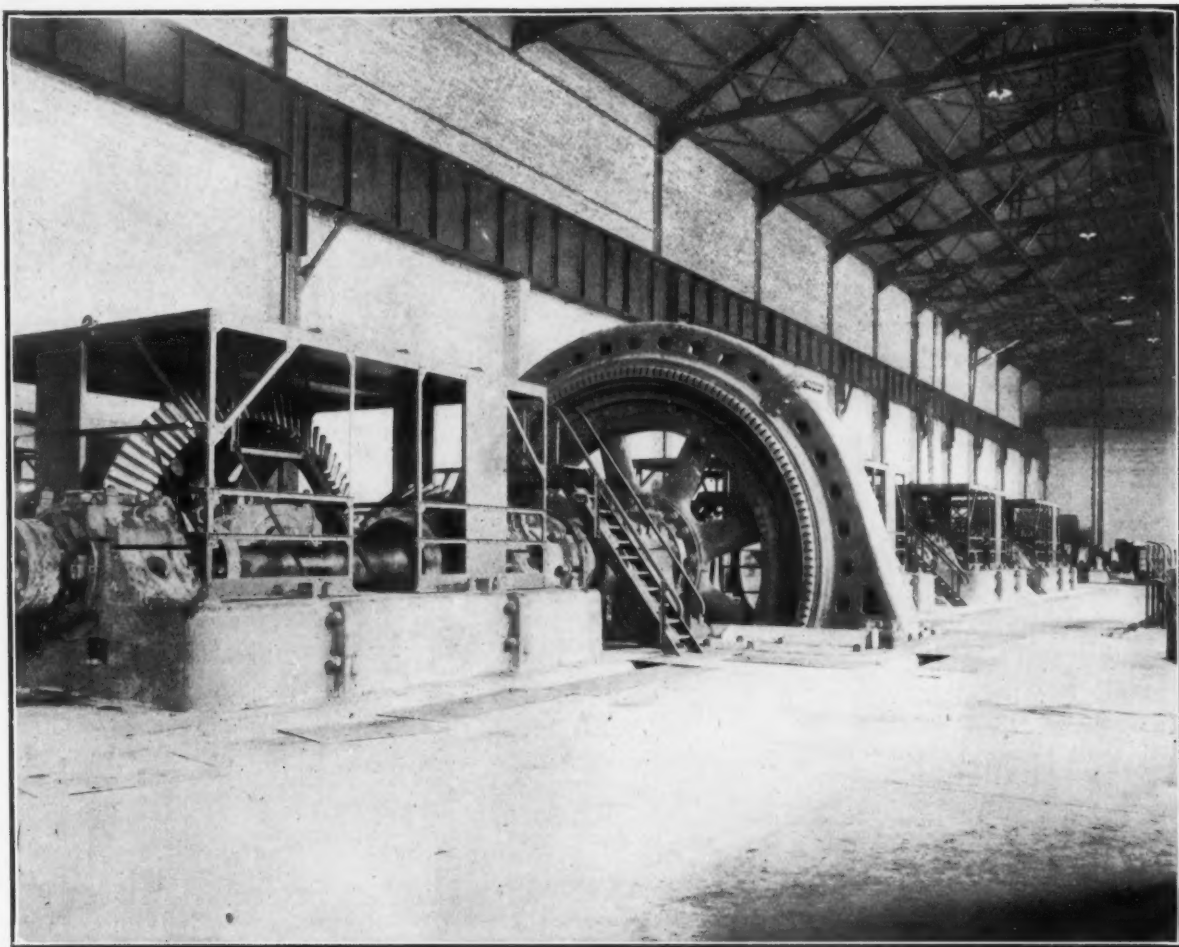


Fig. 10. Bevel Gear Driver of the 32-Inch Blooming Mill.

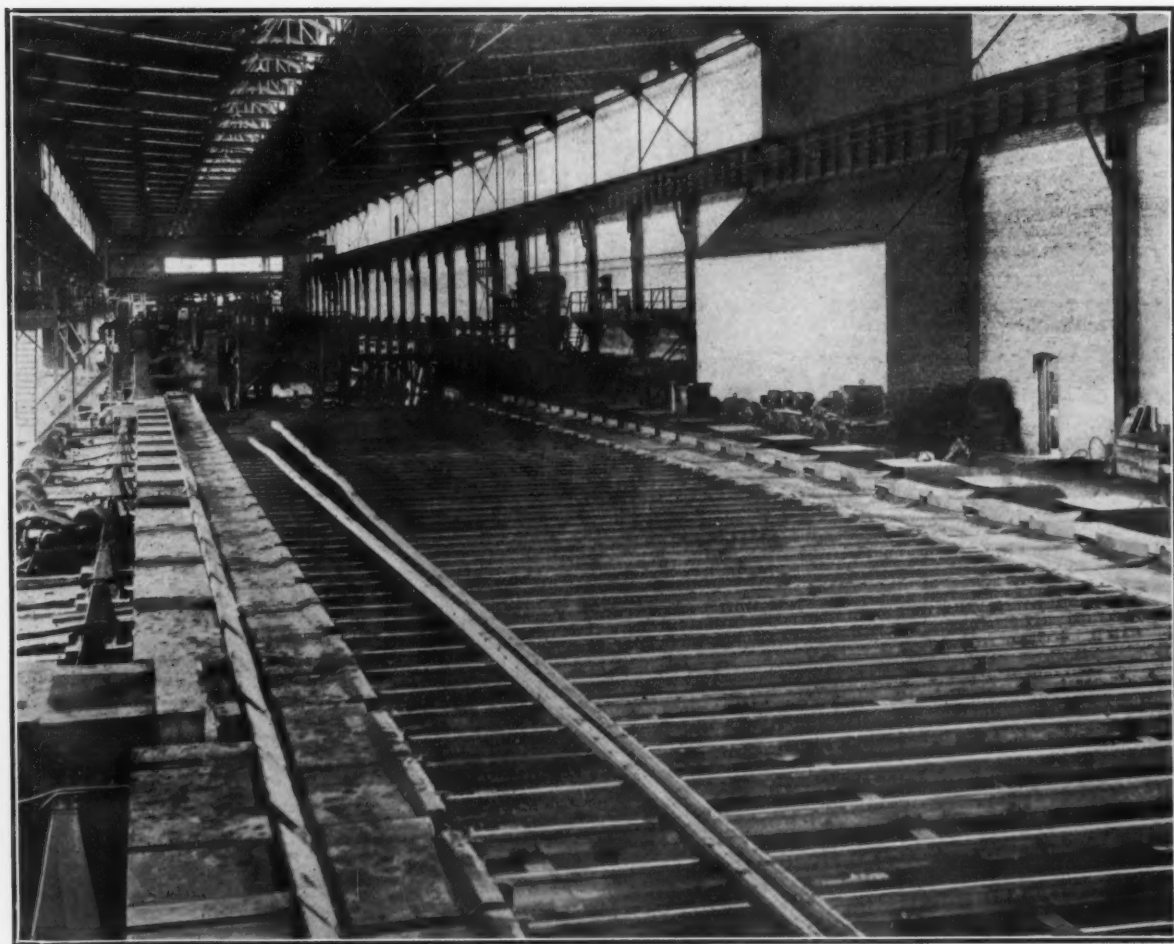


Fig. 11. The Transfer Table for Carrying Product of the 24-Inch Mill Across to the Shear Table or to the 18-Inch Mill in the Opposite Direction.



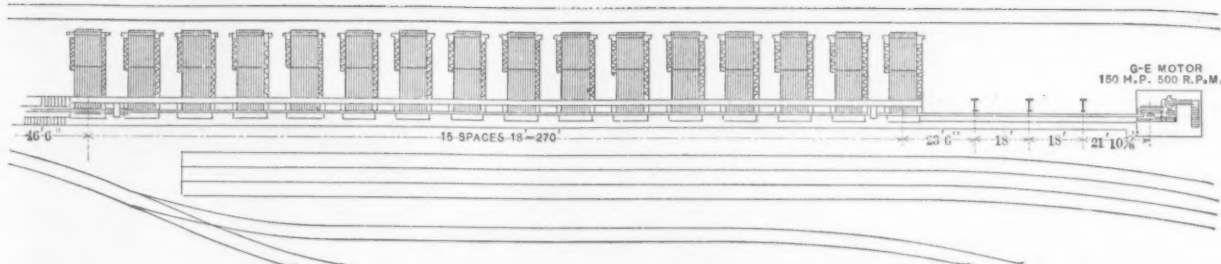


Fig. 5.—The Sixteen Loading Bins Shown on a Larger Scale Than in Fig. 1.

from the shaft of the first roll stand; its function being to crop ends and sever the piece when a cobble occurs in the mill. Upon issuing from the finishing pass, the billets are automatically cut into 30 ft. lengths on an Edwards flying shear, steam for the operation of which is supplied from the blowing engine boilers nearly a mile distant. The main feed pipe passes through the gas producer plant of the No. 4 open hearth building, thence to the soaking pit producers where it is tapped by a 6-in. pipe leading to the shear. A large steam separator is installed at the point of delivery to take care of condensation.

From this point the severed billets run on a shear table which carries them to a skew assembling table having its rolls placed on an angle from the line of travel. From here they pass to four hot beds, Fig. 14, which are of sufficient capacity to take care of the product of the 18-in. mill which is designed to handle billets at the rate of 150 tons per hour.

These continuous mills and accessories were designed by the Morgan Construction Company, Worcester, Mass. The 24-in. mill was built to that company's drawings by the Morgan Engineering Company, Alliance, Ohio. The 18-in. mill was built to the Morgan drawings by the

United Engineering & Foundry Company, Pittsburgh, Pa. The preliminary and flying shears, with receiving tables and billet assembly table, were built in the shops of the Morgan Construction Company, Worcester, Mass.

The Mill Drives.

Five General Electric motors, with a combined capacity of 22,000 hp., supply motive power for the main mill drives. The units comprising this equipment include two 14-pole 2000 hp., 6600 volt motors running 214 rev. per min. for the 40-in. mill, and three motors, 14-pole, 6000 hp., 6600 volt, running 83½ rev. per min., one each of the latter being coupled to the 32, 24 and 18-in. mills. In the 40-in. mill the gear drive, as shown in Fig. 9 in the supplement, is practically a duplicate of that used for corresponding stands in the rail mill, the only difference being that the gears are housed in the motor room instead of the mill proper as in the former case. On the succeeding mills a different gearing is used. Here the drive is from a main shaft through a line of five bevel pinions which engage the large bevel gears direct connected to the mill, as shown in Fig. 10 in the supplement. With the exception of one about 11 ft. in diameter on the fifth stand, all of these main gears are over 14 ft. in

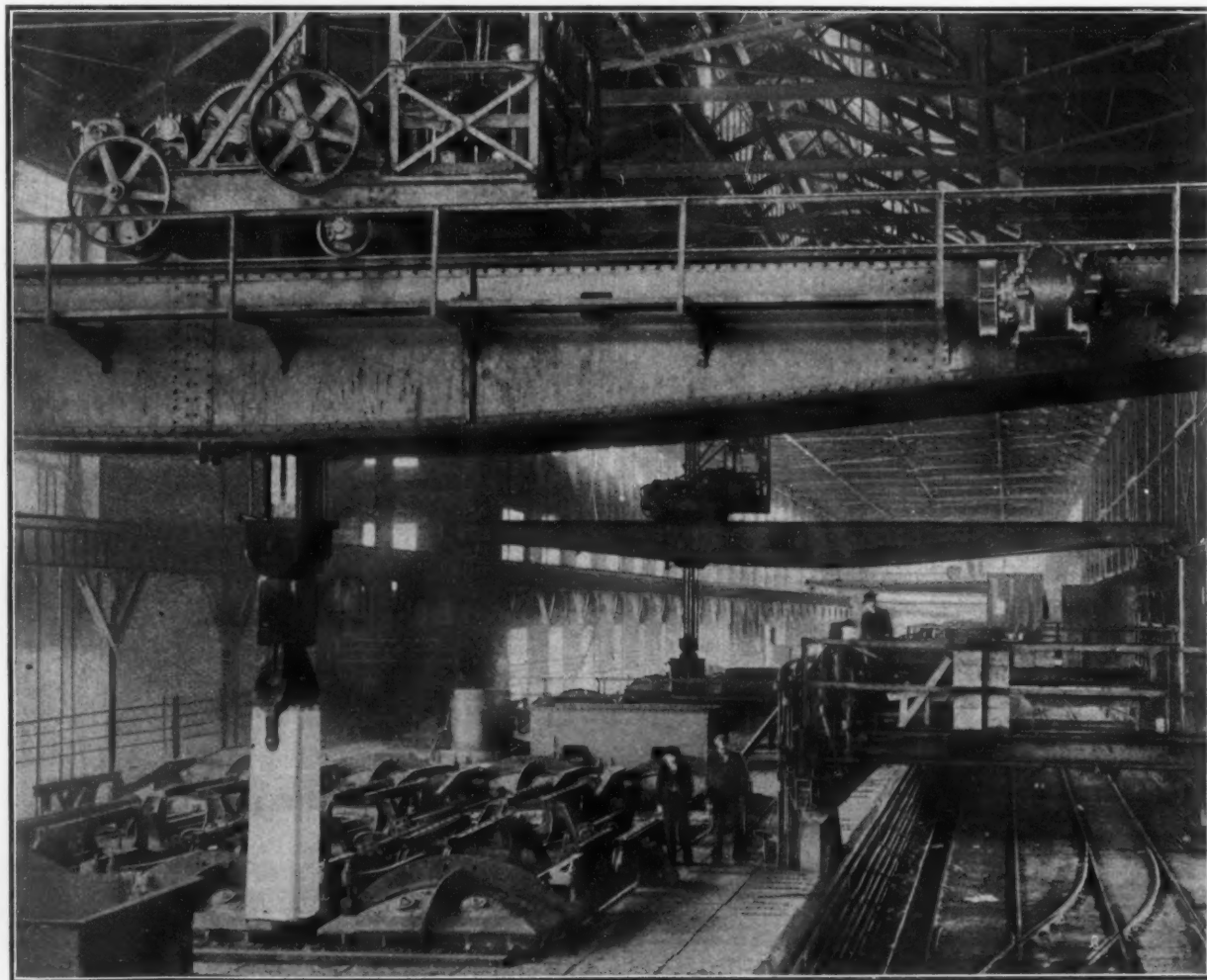


Fig. 12.—The Soaking Pits, Showing a Crane Handling a Hot Ingot.

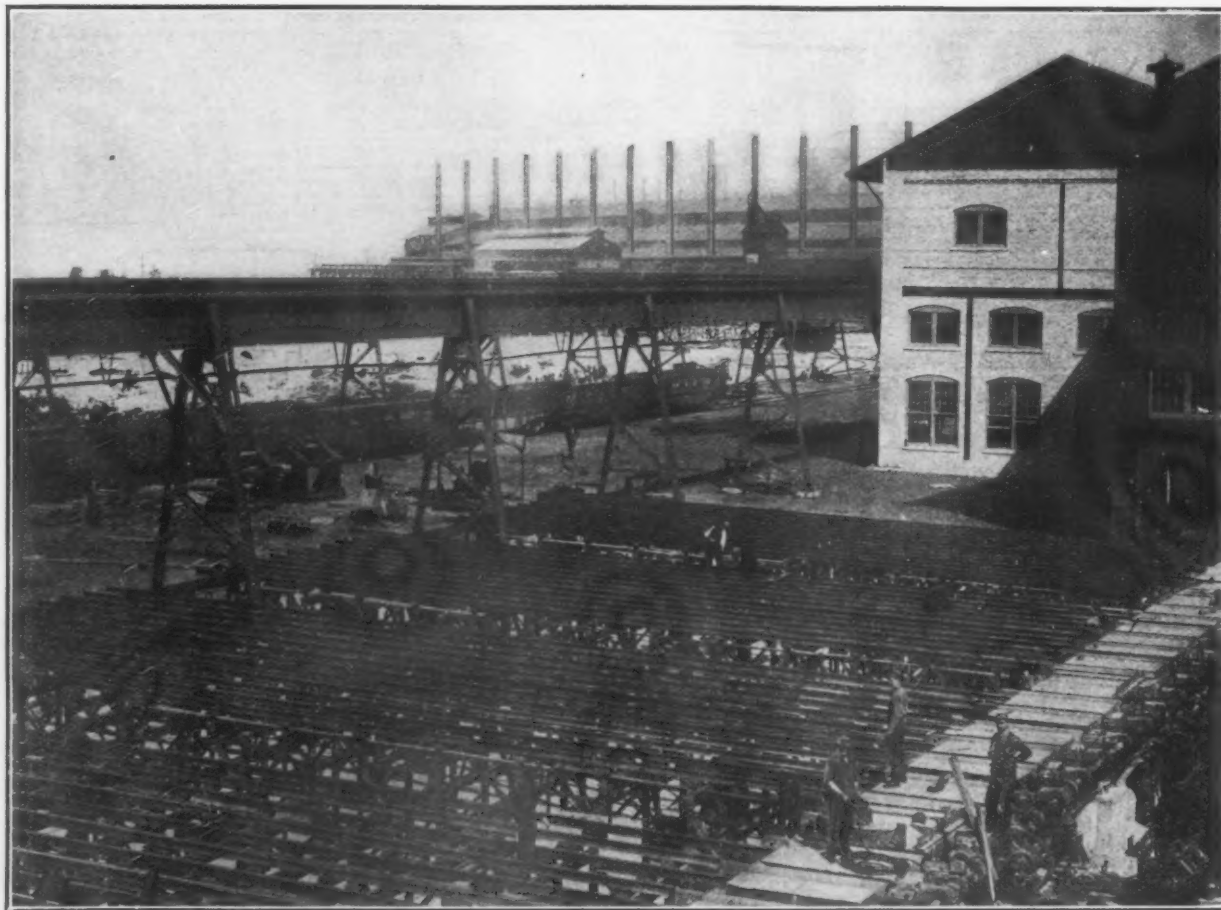


Fig. 14.—The Hot Beds Serving the 18-In. Continuous Mill, Also a Partial View of the Crane Runway Covering the Yard on the North Side of the Mill.

diameter. They are made of steel castings with planed teeth cut on a special machine built for the purpose by the Gleason Machine Works. All roller and transfer tables are operated by Crocker-Wheeler mill type motors mounted on cast bases and carrying intermediate shafts with two speed reductions.

As in other parts of the works, special attention has been given in this mill to the guarding of moving machinery in the most substantial manner. In the motor house an interesting example of the care exercised in this respect may be noted in the views in the supplement which show the guards inclosing motor gears. These are designed for the double purpose of protection against personal accidents and to prevent injury to the gears through accidental dropping of a load from overhead cranes. All of the gears in this department are encased in steel guards with top covers and so constructed as to be conveniently picked up and removed by cranes when it is desired to uncover the machinery for repairs.

The Soaking Pit Furnaces.

Ingots are served to the mill from 12 soaking pit furnaces, Fig. 12, each accommodating 16 ingots. The building in which they are housed is common to both the rail and billet mills, an equal number of furnaces being contained in the rail mill end. From these reheating furnaces ingots are brought to the delivery table of the initial stand of the 40-in. mill upon electrically operated ingot buggies. The system of control governing the movement of the ingot buggies is in the hands of one operator and is safeguarded by an ingenious arrangement of automatic interlocking switches. While identical in principle with the system heretofore described as applying to the rail mill end, improvements have been introduced with a view to rendering more nearly automatic and positive the movement of ingot buggies. Under the perfected plan five transmission bars for trolley contact are used. Four of these are cut in sections corresponding to the

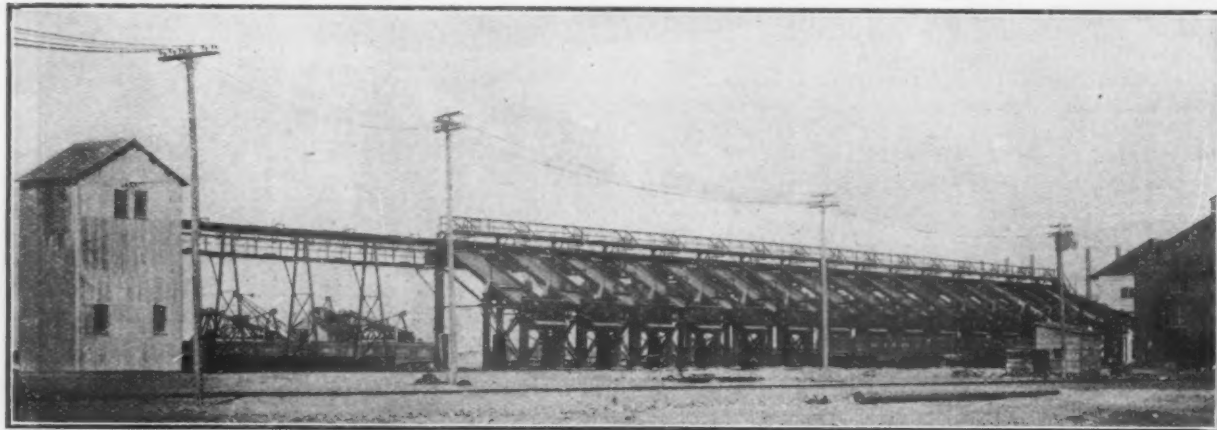


Fig. 13.—The Loading Bins at the West End of the Mill.

location of the several pit furnaces, the fifth bar furnishing unbroken contact the full length of the circuit. In effect the arrangement is similar to the railroad block system. When a buggy is in the delivery table section, the circuit for the car coming from the opposite direction is automatically broken, making collision impossible. When the car in the table section has delivered its ingot, it is started back by the operator and as soon as it passes out of the table section the circuit for the opposite car is automatically re-established. The entire building containing the soaking pit furnaces is 84 x 1350 ft. Its auxiliary equipment is similar to that of the rail mill end which was described in *The Iron Age*, April 1, 1909.

Handling arrangements outside of the mill give every facility for loading and transportation of the product. On the north side, Fig. 13, are shipping and storage yards paralleling the full length of the mill, and extending along and beyond the west end hot beds. These yards are covered by two crane runways, one of which carries a 5-ton crane with a span of 45 ft. 6 in. next to the mill and terminates at the motor house. The outer adjoining yard 1015 ft. in length, has a span of 85 ft. and is equipped with three 20-ton Alliance cranes which serve the two north side hot beds and underlying switch tracks. Each of the motor houses is also entered by switch tracks, all of which connect with the general trackage system of the works.

Looking After Credits.

The Iron and Steel Board of Trade, 257 Broadway, New York City, has inaugurated a most thorough and comprehensive system of credit investigations, whereby credit men in all parts of the United States interchange their ledger experience for their mutual benefit and protection in credits.

It is a recognized fact among credit men that every merchant leaves a record—good or bad—in the minds or in the account books of his creditors, in a dozen different markets, and credit men know, they would sooner check an order, based on the experience of other creditors with the man they wish to know about, than they would feel safe in doing if they relied wholly upon a man's own personal statement or depended solely upon a local correspondent's report written up wholly in a town where the man never buys a dollar's worth of goods. The credit man's ideal is the ledger experience of other creditors with the man about whom he wishes to know, the kind of information that tells him the number of years sold; the date of last shipment, the highest amount sold at any one time; his average monthly purchases, sold on what terms, payments made in full or on account, discount, prompt or slow pay; limit placed on the account; risk regarded good, fair or bad. The Iron and Steel Board of Trade makes this investigation among creditors in every market, gathers bits of "experience" from each creditor, thus giving the man's complete history, his paying record and his true credit standing.

In addition to this improved system of credit investigation, the Iron and Steel Board of Trade publishes the "Blue Book," a reference book of credits containing over 200,000 rated names in hardware, iron, steel, metals, machinery and kindred lines. The book is confined exclusively to these special branches of trade and is a handy and convenient reference book, issued semi-annually. The information given has been compiled under the direction of John W. Ealy, whose experience in this line covers a period of some 30 years.

Crerar, Adams & Co., Chicago, railroad supplies, are having plans prepared for a seven-story warehouse of mill construction, about 100 x 125 ft., to be erected in the new North Side manufacturing district at Fairbank court and Erie street. The firm, which for many years has occupied quarters at Fifth avenue and South Water street, will upon completion of the building remove to the new location, where improved facilities and enlarged space will be provided for the handling of its business.

The National Machine Tool Builders' Association.

Conclusion of the Proceedings of the Convention.

The closing session of the eighth annual convention of the National Machine Tool Builders' Association, which took place on Wednesday afternoon, October 13, at the Hotel Astor, New York, was largely given over to a stereopticon lecture by J. P. H. Perry of the Turner Construction Company, New York, which is presented elsewhere in this issue, and the annual election of officers. The proceedings of the sessions of Tuesday and Wednesday morning were fully reported in *The Iron Age* last week.

The annual election of officers went off smoothly, and the honors went chiefly to the Cincinnati and New England delegations. F. A. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio, was chosen president by acclamation after a short preliminary skirmish in which other names were mentioned. Fred L. Eberhardt, Gould & Eberhardt, Newark, N. J., the retiring president, was elected first vice-president, and P. E. Montanus, Springfield Machine Tool Company, Springfield, Ohio, the retiring secretary, was elected second vice-president. C. Hildreth, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass., was chosen secretary, and George W. Fifield, Lowell, Mass., was elected treasurer. William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati, Ohio, was appointed, as is the time honored custom of the organization, at the head of a committee to escort the newly elected officers to the front. There was a series of speech making during which the retiring officers and the new officers exchanged felicitations. The strenuous efforts of the Rochester delegation resulted in the selection of that city for the spring meeting of the association after a spirited contest in which the Atlantic City adherents came out second best.

The majority of the members of the association stayed in New York over Thursday to participate in entertainments. Many of them attended a theater party given by the *American Machinist* on Wednesday night, when they witnessed an excellent performance of "The Girl and the Wizard" at the Casino Theater.

On Thursday about 500 machinery men, including the members of the Machine Tool Builders' Association, attended the annual outing of *Machinery*. The delegation was conveyed by steamer to Fort Hancock and the Sandy Hook Proving Grounds, where they were met by Col. Roger Birnie of the Ordnance Department, Col. H. L. Harris of the Coast Artillery Corps and other officers. They inspected the machine shop at the proving grounds and also witnessed the firing of a 12-in. gun, a 6-in. gun on a disappearing carriage, two rounds of shrapnel from a 3-in. field gun and one steel shell from a 7-in. howitzer. With their ears ringing from this series of concentrated noises the excursionists were divided into two groups, one of which was taken on the proving grounds' train line to inspect the 16-in. gun, which is the largest gun in the world, while others visited the fortifications and the instrument houses. As is always the case with these excursions, the affair was well arranged, each member of the party being provided with a badge bearing his name and a list of the guests, which made recognitions and introductions easy. A luncheon was served on the trip through the bay and refreshments were served on the way home. The boat landed at the Battery at 6 o'clock and many of the party afterward went to the Machinery Club, where they spent the remainder of the evening.

Press reports that the Allis-Chalmers Company, Milwaukee, will install machinery for heavy pressed steel forgings and engage in the manufacture of Government ordnance are authoritatively declared to be without foundation. It is further stated that the company has no intention of departing from its established lines of activity.

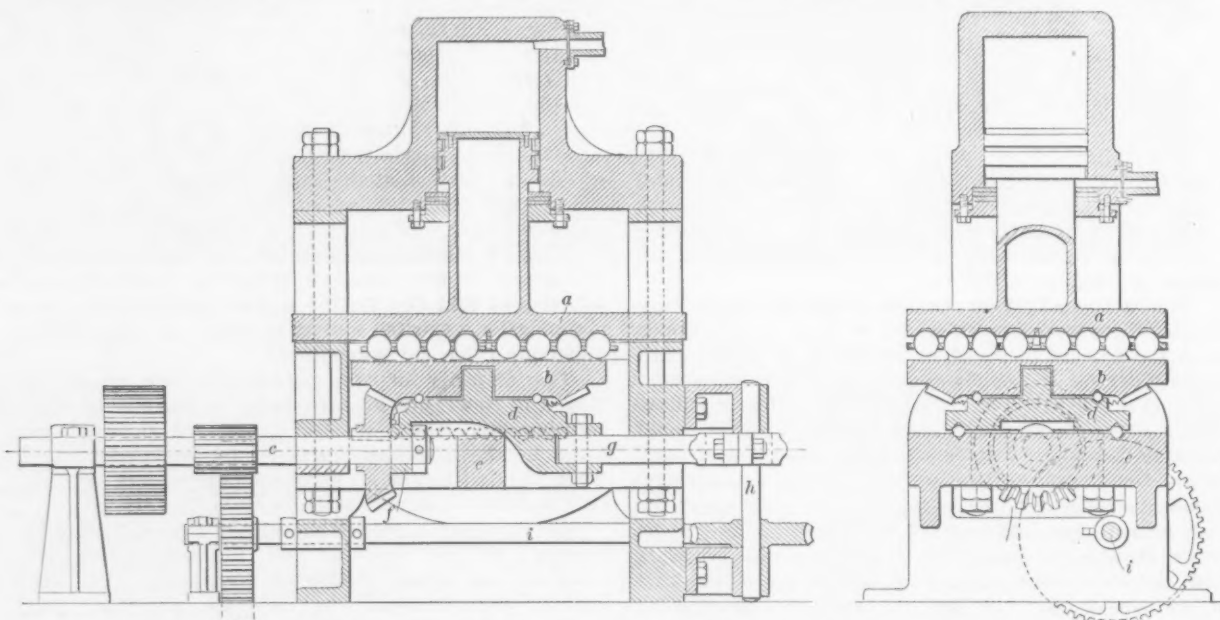
A Unique Metal Rolling Machine.

As a substitute for the usual cylindrical rolls for rolling plates from $\frac{1}{8}$ in. thick up, William L. Jones, 22 Mulberry Place, Newark, N. J., has invented a machine in which the metal is worked by balls. An experimental machine has been built and the product tested, and it has been found, it is claimed, that the product is 50 per cent. stronger than usual commercial grades of iron, and 25 per cent. stronger than double refined iron. The metal also flanges well. The machines can be built to roll plates as wide as 12 ft. easily, and it is claimed that they are not expensive to construct. The iron plates they produce are particularly adapted for boiler or any work for which iron may be preferred to steel.

By virtue of the peculiar action of the balls on the material worked, the balls rolling in concentric circles over the work while at the same time the work is reciprocated laterally and all parts of it are brought under the action of the balls, a plate iron is obtained in which the fibers extend in a circular direction. This is principally responsible for the great strength obtained, but another reason is that the rolling is done in one heat so that the character of the metal is not affected by reheat-

ing. The particular advantages attending the use of balls include the following: Balls will roll in every direction while rolls cannot turn in any direction except at right angles to their axes—when moving in other directions they draw upon the metal. As a consequence of employing balls as one of the rolling surfaces the metal is uniformly rolled in every direction without any dragging action of the rolling surface upon the metal. Another advantage is that the balls are in contact with the entire surface of the metal. A series of rolls would be in contact with the center line only of the reciprocating table.

The cylinder provided at the top of the frame is connected with a source of high pressure fluid, and within the cylinder is a piston which is connected to the platen so that it is capable of moving the platen up or down, or forcing it downward with any desired pressure. By admitting water under pressure the piston may be elevated



A Ball Metal Rolling Machine Invented by William L. Jones, Newark, N. J.

ing. The particular advantages attending the use of balls include the following: Balls will roll in every direction while rolls cannot turn in any direction except at right angles to their axes—when moving in other directions they draw upon the metal. As a consequence of employing balls as one of the rolling surfaces the metal is uniformly rolled in every direction without any dragging action of the rolling surface upon the metal. Another advantage is that the balls are in contact with the entire surface of the metal. A series of rolls would be in contact with the center line only of the reciprocating table.

The illustration herewith shows longitudinal and transverse sectional elevations of the machine. The part designated *a* is called the platen and beneath it is the table *b*, both carried within the main frame. This frame is connected at the top by a piece, securely bolted to it, which carries a hydraulic cylinder for raising and depressing the platen. The horizontal shaft *c* which extends beyond one end of the frame, and is provided with an outboard support, is the main driving shaft.

The table *b* revolves upon a sliding frame *d* being supported by a circular set of balls and a pivotal pin at the center. The sliding frame reciprocates on a platform *e* upon two straight sets of balls. The table is driven by bevel gears from the shaft *c* which is supported in a bearing *f* on the sliding frame and is held with respect to the sliding frame with which it reciprocates by means of a collar. The table is reciprocated by a connecting

rod *g* coupled to the sliding frame *d* by a pin, while the other end is provided with an eccentric and eccentric strap. The eccentric is carried upon the eccentric shaft *h* which also carries a worm gear driven by a worm on the auxiliary shaft *i*. Collars take the end thrust of the auxiliary shaft. This shaft extends outside of the frame and is supported by an outboard bearing. Inside of the latter is a gear which meshes with a pinion carried by the shaft *c*. The latter is driven by a gear which engages with a pinion not shown, and by means of which the entire mechanism is put in motion. The pinion from which the auxiliary shaft is driven, as will be noticed has a width of face twice that of the gear which it drives, and the pinion which engages with the main driving gear on the shaft *c* is one-half the width of the face of that gear. By this arrangement the shaft *c* is allowed a certain right and left motion without disengaging the gears or leaving less of their faces in contact than the width of the narrower gears.

As an alternative means of producing the downward pressure of the platen there may be used in place of the hydraulic cylinder a large screw working through a worm wheel supported between ball thrust bearings in the frame head, and driven by a worm under the action of an independent motor. This screw may be used to raise or lower the platen or force it down during the rolling action.

In the operation of the machine the platen *a* is first elevated a sufficient distance to permit the metal which is to be rolled to be placed upon the table under the platen. The pressure is then applied to depress the platen. At the same time the table is revolved and reciprocated. The extent of the movement of the sliding

frame is sufficient to cause the balls to travel above the table in an irregular path, so that the balls will come into contact with every portion of the metal which is to be rolled. In order that the balls may not travel in regular paths the bevel gears and the eccentric can be proportioned so as to prevent it. The platen may be elevated a sufficient distance above the table to permit the insertion of a puddle ball and the iron plate may be finished with a single heat.

It will be appreciated that the balls roll the iron out in a series of spirals, each formed of spirals. The puddle ball being started in the center will be gradually rolled to the thickness desired. This reduction in thickness will be accompanied by an increase in area, which increase will be developed from the center outward as the balls are rotating while the metal is reciprocating. The movement upon the balls will be in the form of a spiral and as the metal is being forced outward constantly, the spiral formed by each ball will become a large spiral by the rotation of the metal. On account therefore of the balls engaging in all directions and at the center, the surface of the metal being rolled will be more thoroughly acted upon and the rolling be more complete, it is claimed, than if the action was done by rolls.

Canada Wants Shipyards.

TORONTO, October 16, 1909.—Of anticipated changes in Canadian public policy affecting industry, the one that throws its shadow furthest forward is that relating to shipbuilding. That Government aid is to be given for the development of the shipbuilding industry is an expectation now quite generally held by men of all parties. As has been said before, the impulse that is moving public opinion, and, presumably, Government policy, afresh on this question is not the purely economic one that operated in former movements for the extending of the bounty system to shipbuilding. Then the one thought was to bring a large merchant marine into existence in the interest of the country's carrying trade, and to have the vessels built in Canadian yards for the benefit of home enterprise and home labor. At present the conspicuous factor in the agitation is the popular desire for the construction of a navy. There has really been no great change in motive, but rather the seizing upon a new circumstance and the turning of it into an opportunity for forwarding the object aimed at from the first—the development of a shipbuilding industry on a scale the country's needs seem to call for. It would be a mistake to suppose that the very favorable reception the Government's proposed departure toward naval expansion has meant is an indication of a new enthusiasm for militarism. The Canadian people would have welcomed the adoption of a naval policy years ago, both because such policy was in itself agreeable to their enlarging ideas of national importance and to their sense of duty to the protecting power of the Mother Country, as well as conducive to the fostering of a shipbuilding industry.

Both political parties are favorable to the scheme, which is expected to be embodied in legislation in the session of Parliament that is to meet next month. Ministers have stated their views as to the desirableness of having the ships built in Canada. In a speech delivered at Halifax on Thursday the leader of the Opposition, R. L. Borden, declared himself of the same opinion.

It is now stated that the Belfast firm, Harland & Wolff, will form a Canadian company in conjunction with the Canadian Pacific Railway Company and will

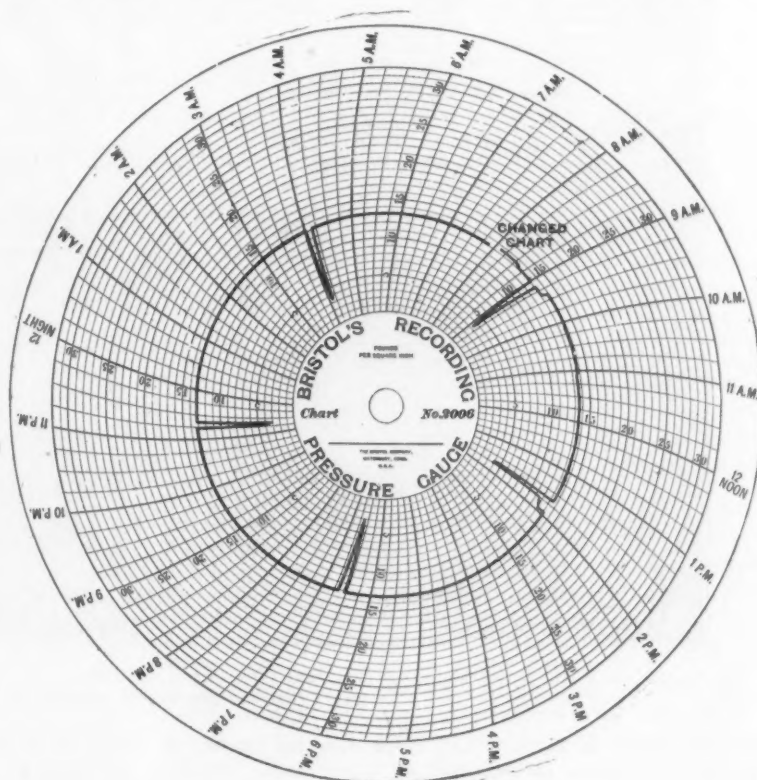
establish one drydock and shipbuilding plant at Levis, on the St. Lawrence, and another at St. John, N. B. The Dominion now assists substantially in the building of drydocks. By an act passed last year provision is made for the paying by the Government of 3 per cent. per annum on the capital cost of all approved drydocks, the payments to be continued 20 years, but the amount in no year to exceed \$45,000.

C. A. C. J.

A Gayley Dry Air Blast Pressure Record.

The accompanying diagram is reproduced from a sheet showing the tracing made in 24 hours by a recording instrument connected with a pressure gauge at a blast furnace using the Gayley dry air blast. For special reasons the name of the works at which this record was taken is not disclosed. The uniformity of pressure here shown is a remarkably conclusive indication of the uniform conditions in the furnace hearth. The drop in pressure shown at regular intervals was merely due to the slackening of blast after casting.

A New Wickwire Furnace at Buffalo.—The Wickwire Steel Company this week commenced the construction of a second blast furnace in connection with its plant on Rattlesnake Island, Niagara River, at Wickwire, N. Y., just north of Buffalo. Work will be pushed rapidly in order to have the new furnace ready for operation early next summer. The furnace will be a dupli-



A Gayley Dry Air Blast Pressure Record.

cate of the first, except that the power house will be more extensive. The addition will be erected on the eastern end of the island, adjoining the present furnace and auxiliary buildings. It is the intention of the Wickwire Steel Company to bring down 12 additional cargoes of ore from its Lake Superior mines before the close of the current season of navigation, the average cargo to be carried by each vessel being 6000 tons.

National Founders' Association.—The annual convention of the National Founders' Association will be held Tuesday and Wednesday, November 9 and 10, at the Hotel Astor, New York. A meeting of the Administrative Council will be held on Monday, November 8. The alumni dinner is appointed for the evening of November 8, and the annual banquet of the association for the evening of November 9 at the Hotel Astor.

Reinforced Concrete for Factory Construction.*

Value of This Material for Machine Building Plants.

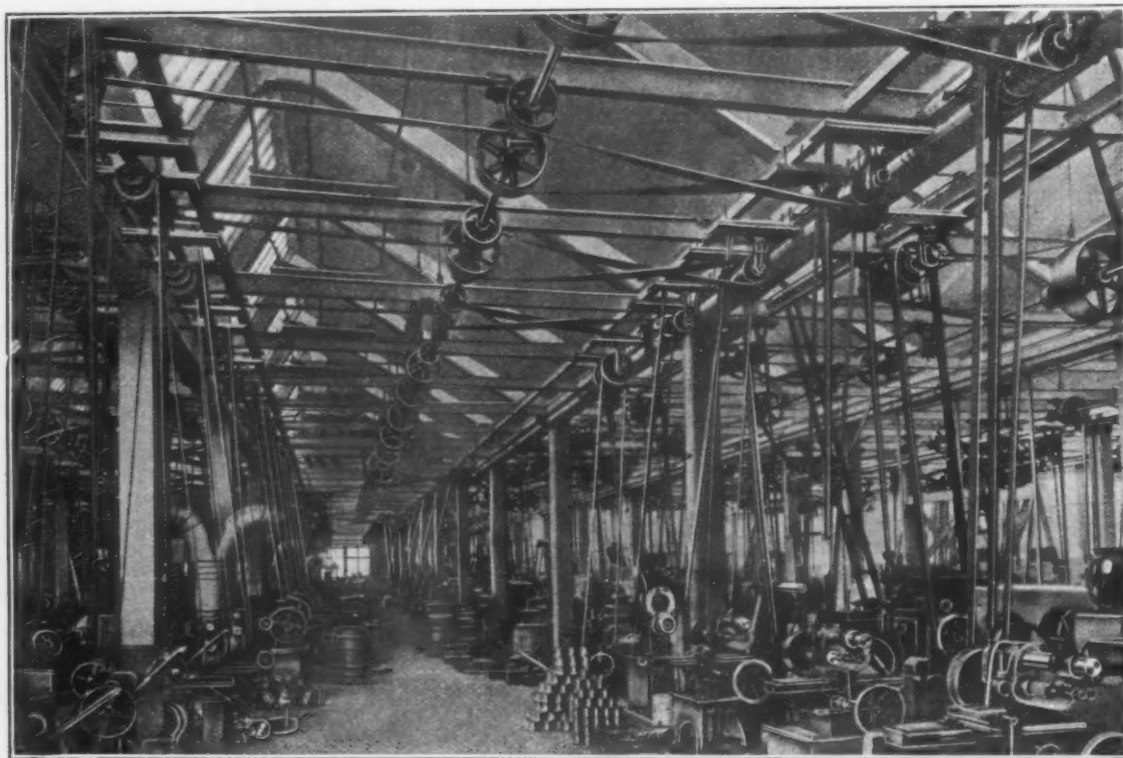
BY J. P. H. PERRY, NEW YORK CITY.†

For buildings, which are to be used for the manufacture of machine tools or for purposes allied to this business, reinforced concrete construction is almost ideal. To make this clear, it may not be amiss to treat the subject from the side of the contracting engineer, whose business it is to consult with owners who contemplate new buildings, and convince them of the worth of this material. In the course of several years' experience along this line, the speaker has found that certain properties of reinforced concrete are either misunderstood or, at best, unappreciated.

The most frequent question asked is whether or not concrete is an experiment? When this type of construction was first being introduced in this country, statements as to the worth of the material had to be accepted

pression at the top. Concrete possesses great strength in compression, while in tension it is weak, but by placing bars or wire at the underside of a simple beam it becomes an economical structural member. The reinforcement takes the tensile stresses and the concrete the compression. It is possible to make the combination, because concrete and steel expand and contract in almost identically the same ratio. This combination was first made by Monier, a French flower-pot maker, in about 1860, but the commercial use of reinforced concrete does not date much back of 1897 or 1898 in this country.

The average reinforced concrete building is constructed similarly as a structural steel building—a skeleton or cage construction of the columns and floors is run up first, and as soon as the forms or centering have



Interior of the Pierce-Arrow Motor Car Company's Factory B, Buffalo, N. Y., Showing Reinforced Concrete Saw-Tooth Roof Construction and Manner of Supporting Shafting.

almost wholly on faith. Then there were no reinforced concrete factories or warehouses which were several years old and in better shape than when first turned over to the owner as there are to-day. Reinforced concrete is now an established structural material of recognized merit. It is not necessary to base this statement merely on the existence of some 4000 or 5000 reinforced concrete buildings of ages varying from 12 years down to a few weeks, for a study of the material itself is an assurance of the permanency of the structure in which it is used.

Concrete has been known from the earliest ages. In many parts of Southern Europe concrete viaducts, bridges, foundations, &c., can be found, many of them 2000 years old. Reinforced concrete is simply an improvement over this ancient concrete, because of the better quality of cement used to bind the aggregates together, and the addition of steel reinforcement. A beam in a building is subject to tension at the bottom and com-

been removed from any one story, the building of the walls, stairs, partitions, &c., begins, and then follows the progress of the framework of the building as fast as possible. In this way an economical distribution of labor and material, and very rapid construction are possible.

Backed by skill and experience a reinforced concrete building can be completed in about the same or less time than a structural steel building. While a reinforced concrete skeleton for a building cannot be erected as fast as one of steel, it can be begun and partly erected before the necessary structural steel can be detailed, rolled, fabricated and shipped from the mills, and the building finished ready for occupancy before the steel structure can catch up with it. Under present market conditions it takes from six to nine weeks to obtain steel from the mills. The necessary small size bars for reinforcing concrete can always be obtained out of stock on 24 hours' notice. An amount of cement, sand, stone and lumber sufficient to get a job started can nearly always be obtained locally. With reinforced concrete construction it is not necessary to wait before concreting the footings and the first-story columns to have complete detail draw-

* An address given before the Machine Tool Builders' Association, in New York, October 13, 1909.

† Turner Construction Company, 11 Broadway, New York.

ings of the building, such as is the case in structural steel work.

Examples of Rapid Construction.

The Rogers & Pyatt factory at 34 Fletcher street, Manhattan, N. Y., is a 10-story and basement building, roughly 60 x 70 ft. in plan, of reinforced concrete throughout. After the completion of the foundations from the day that the first concrete was put in the basement columns to the completion of the roof, but 47 working days elapsed, and the building was turned over to the owners for occupancy in three and one-half months. The Isaac Mason Warehouse, 137 Johnson street, Brooklyn, N. Y., is a seven-story and basement reinforced concrete building, 40 x 80 ft. in plan. It took but 48 working days to put the roof on this building after the excavation was finished, and but a few days over three months before the owner moved into the building. The Bush model factory, No. 3, at Thirty-sixth street, South Brooklyn, N. Y., is 600 ft. long, 75 ft. wide, six stories and basement in height, of reinforced concrete throughout. The

seventh floor of the Robert Gair Company's paper goods factory in Brooklyn, N. Y. The floors in this building are designed for live loads of 250 lb. per square foot. The press in question weighs 16 tons and rests on a base 3 x 6 ft.; the load is therefore nearly one ton per square foot. There is no deflection noticeable under this press, and there have been no precautions taken to distribute the load.

Joseph Bancroft & Sons, Wilmington, Del., who have a reinforced concrete dyeing establishment with floors 6 in. thick, spanning between the beams 10½ ft., state in a letter: "This floor was unintentionally subjected to an impact test by a piece of granite falling 32 ft. and striking on one corner making a concentrated blow over an area of 6 x 4 in. The piece of granite was 6½ ft. long, 18 in. wide and 8 in. thick and weighed 173 lb. per cu. ft. The floor is still in use and this accident occurred four years ago. All of our floors are subject to heavy loads and heavy shocks, and wherever this material has been employed, it has given satisfaction."

Little Vibration.

In a building for a machine shop, the matter of vibration is important. The majority of owners of concrete plants are well satisfied that they get less vibration with this kind of construction than with any other.

The Robert Gair Company's large plant in Brooklyn, consists of two six-story brick and first-class mill construction reinforced concrete factory. All three structures are filled with the heaviest presses, cutters, embossers, &c. The vibration in the mill construction buildings is such that a plumb-bob hung parallel to any one of the walls will sway to a considerable extent; in fact the buildings show that it would be difficult to produce more severe vibration than they are subject to. The reinforced concrete structure directly across the street, subject to the same conditions of foundations, loads, vibration, &c., is remarkable for its rigidity. This building measures 231 x 200½ ft. and is nine stories and basement, having 10 acres of flood space. On a typical floor are a number of very large presses; one room on the seventh floor, 231 ft. long is filled with presses which operate rapidly and have very heavy reciprocating parts, yet a coin will stand on edge anywhere on their base frames. All through this factory one may lay his hand against a column and feel scarcely a tremor. The saving in such a building in repairs to machinery and in power necessary to operate it will be discussed later.

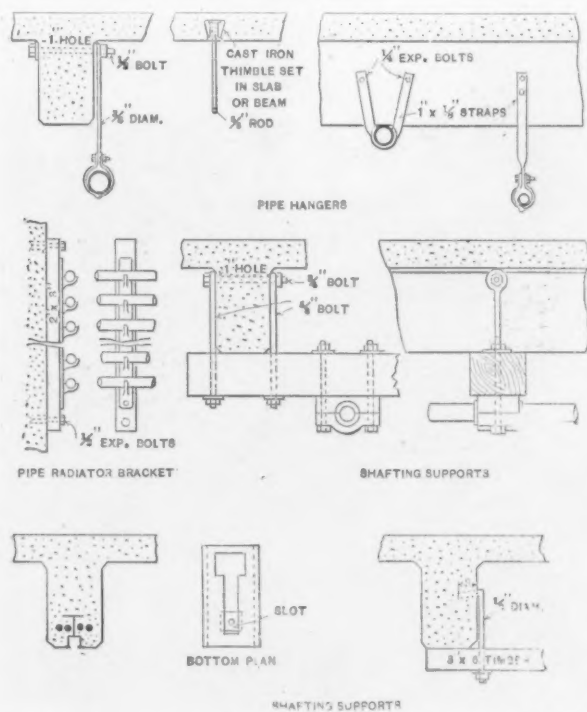
The Ketterlinus Building at Forth and Arch streets, Philadelphia, Pa., is a lithographing factory 80 x 67 ft., eight stories and basement, of reinforced concrete throughout, excepting a facing of brick with terra cotta trimming, which adjoins an older part of the plant. The old building is of steel construction fireproofed with terra cotta. In both buildings heavy machinery is running and large printing presses are at work on the third, fourth and fifth floors. A comparison of the serviceability of the two types of construction shows the advantages of reinforced concrete.

In the building of steel and terra cotta, the vibration from the machinery is noticeable as soon as one enters, while in the new wing, the concrete, because of its greater mass and inertia, absorbs the vibrations. The machinery is such that it is difficult to appreciate its vibratory tendency. As a result of the reduction in vibration in the reinforced concrete building, the noise of the machinery is greatly lessened. This is in a building of comparatively small size, but considerable height—a type more susceptible to vibration than a larger structure would be.

Vibration Not Harmful.

Engineers and architects without experience in reinforced concrete sometimes question its power to resist long continued vibratory stresses. The Robert Gair building above referred to has been standing in part (the building was put up in two sections with an interval of two years between) since early in 1905, and the Ketterlinus building since 1906.

Even more convincing that vibration will not injure



Various Ways of Attaching Piping and Shafting to Reinforced Concrete Beams.

roof was put on this building in 63 working days after the piles were driven.

These three records should demonstrate clearly that reinforced concrete construction does not mean slow construction.

In the case of extension No. 3 of the Bullock Electric Company, at Norwood, Ohio, reinforced concrete was adopted because of the great reduction in the time necessary to complete as compared with steel construction. This building is two stories high, 256 x 150 ft., and was ready for the steel roof trusses in nine weeks after the contract was signed.

Weight Supporting Ability.

The load carrying capacity of a building is probably as important an item from the machine tool industry standpoint as any other feature. Reinforced concrete buildings are noted for their strength and for their ability to safely carry unexpected loads. Floors have been designed to carry as high as 5000 lb. per square foot, and have been doing their work satisfactorily for seven years. In several buildings which have been constructed by the company, with which the speaker is connected, floors have been designed to carry 600 lb. superficial load per square foot, and have been subjected to 1500 and 2000 lb. live loads without the slightest indication of injury or increased deflection. Perhaps as remarkable an instance of the strength of reinforced concrete floors, under severe load is furnished by an embossing press on the

reinforced concrete, is the experience of the railroads. It is difficult to imagine more severe vibration than that caused by a rapidly moving locomotive and train over a steel bridge. Added to the vibration is a tremendous pounding and shock. Nevertheless there are being built all over this country to-day, reinforced concrete decks, or road beds, on steel girder bridges. Some of these concrete slab decks have been in continuous use since 1904, and their service has been such as to warrant other railroads constructing similar work. Surely when the chief engineers of the Pennsylvania, the Chicago, Burlington & Quincy, the Illinois Central, the Rock Island and the Delaware, Lackawanna and Western railroads are satisfied that reinforced concrete withstands vibration and shock better and more economically than any other structural material it should be sufficient.

Not only are the most prominent railroads using reinforced concrete for the decks of steel girder bridges, but they are building the girders themselves of the same material. There are numerous trestles of concrete in existence which have bearing on this question of the resistance of concrete to vibration; for example, the Richmond trestle has girders of reinforced concrete 60 ft. long and columns 60 ft. high, built for and actually carrying standard railroad traffic.

In April, 1904, there was completed a reinforced concrete station at Warwick avenue, on the Atlantic avenue line of the Long Island Railroad, in Brooklyn, N. Y. At this point the railroad runs on an elevated structure. The vibration which this building has been subjected to for five and a half years can readily be imagined, and yet the walls and floors are in as good condition as when it was finished.

Installing of Fixtures.

The supporting of shafting, piping and electric wires and making changes in their locations are considerations in the adaptability of reinforced concrete construction to industrial buildings. In the accompanying illustrations are shown different methods of installing shafting or piping, either during the course of the construction of the building or after it has been completed. It is apparent from the various schemes shown that transmission can be provided for very simply. These sockets or holes, as the case may be, are set or left in the forms or in the concrete while it is being poured. Many have largely magnified the difficulty of making changes in their buildings. This difficulty of cutting holes in concrete floors or walls is not nearly so great as it seems on first thought. That concrete is hard to cut through is admitted, but that this is a serious fault is denied.

Ordinarily, where a man puts up a new mill or factory he has his machinery and shafting layout well in mind, and generally he knows just where each machine is to be set. If this is so, provision can quite easily be made for any bolts or hangers before the concrete is cast. The modern tendency toward individual motor drive eliminates long lines of shafting. But assuming that changes in machines or shafting or heating pipes or belts have to be made in a reinforced concrete building, a floor can be cut through, or a beam can be tapped, and an expansion bolt or a hanger inserted. The difficulty of cutting through a 4-in. floor slab is very much less than is so widely supposed.

If making changes were so difficult, is it reasonable to suppose that concerns like the Bush Terminal Company of South Brooklyn, N. Y., would erect three model factory buildings, each 75 x 600 ft., by six stories and basement, putting one up each year for three years, and then after waiting one year undertake the construction of an additional factory along exactly the same lines, only this time 75 x 750 ft., and file plans for starting work as soon as this building No. 4 is finished on two more buildings, each 75 x 750 ft.? These buildings are not for the use of the builder and owner. They are designed to meet the needs and withstand the criticisms of unknown prospective tenants, who may be silk manufacturers, candy makers or hardware supply concerns. Reinforced concrete was chosen because it best met the requirements of all kinds of manufacturing companies.

If changes were so very hard to make in concrete buildings, would J. B. King & Co. have erected 14 new concrete buildings in seven years, or would the Murphy Varnish Company have awarded 10 contracts to one concrete construction company for new building work in two years, or would Robert Gair Company have doubled the size of its concrete factory after having used the first half for two years, testing it under every conceivable condition as regards alteration to machinery and shafting layouts? This matter of making changes in concrete buildings has been greatly exaggerated.

Economy of Equipment Upkeep.

The repairs to machinery, the renewals of bearings, the amount of power required to operate machinery, the maintenance of shafting and all similar charges in a manufacturing building of reinforced concrete are lower than in the mill construction type of factory. Shafting or machines once attached to or set on concrete floors remain in place. There is no tendency to walk and get out of line, with consequent increased wear on moving parts



A Typical Floor in the Robert Gair Company's Building, Brooklyn, N. Y., Showing Paper Cutting Machines and Shafting Supports.

and bearings, together with an increase in amount of power necessary to operate. The superintendents of several of the large companies occupying reinforced concrete buildings about New York City have stated repeatedly that they consider this one property of concrete buildings more valuable than any other. In the Robert Gair building there is a saving estimated by the owner to be \$5000 a year on this item alone, as compared to the mill construction building used by the company under the same conditions.

The Floor Question.

If concrete floors are objected to as being either hard on the operatives or producing dust, which would seriously interfere with the manufacturing process, wooden floors can be laid on top of the concrete. This increases the cost, but not seriously. The prejudice against concrete floors is largely dying out among employees in the average plant. For perhaps 10 days a mill hand will find that his feet hurt if he is working on concrete, but after that he gets used to it and learns to wear thicker soled shoes, and his complaints are likely to be few, because he realizes that the floors are there to stay, whereas he necessarily is not permanent. The great advantage of a concrete floor over a wooden one is that it can be easily washed and is of itself more sanitary.

Impermeability of Walls.

Concrete walls do not need waterproofing. Because of the dampness in many concrete block bungalows the impression is that reinforced concrete buildings having walls of the same material are damp. This is quite the opposite of the facts. The company with which the speaker is connected has erected over 250 reinforced concrete structures, representing over 100 acres of floor space, and in none of these buildings is there any trouble from dampness on the walls. In several buildings brick curtain walls were put on the front and rear and concrete walls on the sides. After heavy storms the 12-in. brick walls will show moisture, whereas the concrete walls have remained impervious. In this class of construction the concrete is placed quite wet and when set thoroughly the walls are very dense and homogeneous. During the process of drying out the walls will undoubtedly be damp, but as this rarely, if ever, takes over four months, the building is dry by the time the stairs, partitions, heating, lighting, plumbing, elevators and other detail fittings have been installed.

The speaker has letters from piano manufacturers,

ity of this type of construction for buildings where traveling cranes have to be used or where large assembling rooms are on the first floor, and the ceilings have to be designed to carry loads on the floor above.

One of the principal advantages offered by reinforced concrete construction of buildings is the amount of light obtainable. In the ordinary mill construction building not more than from 30 to 35 per cent. of the wall area can be used for windows. Reinforced concrete buildings generally have 50 per cent. of their walls in window area, and if necessary 80 per cent. of the walls may be windows. This is possible because of the skeleton method of construction. The light in the interior of a reinforced concrete building is increased by the white, clean interior always obtained. The concrete is left as it comes from the forms, and is given a coat of cold water paint. From the very nature of the material, the construction is sanitary. Vermin are impossible, as there are no places for them to hide. The floors and walls can be washed down at any time, as the construction is waterproof.

If there is one feature of this construction which has successfully withstood criticism it is fireproofness. Balti-



Large Assembling Room in the Pierce-Arrow Motor Car Company's Building, Showing Long Spans of Concrete and Beams of the Same Material Supporting Crane Runways.

stating that they have had no trouble from dampness in their reinforced concrete factories. In this line of industry the slightest dampness would be serious, owing to the large stock of specially seasoned wood always carried, which dampness would ruin. It is safe to assume that reinforced concrete buildings are entirely dry. If slight condensation on the walls would be a serious matter in certain processes, it is possible to furr the walls. Condensation is not usually a factor, and, owing to the very slow conduction of heat in concrete, the temperature of the walls remains constant with consequent decrease in the condensation.

Other Advantages of Reinforced Concrete.

Long spans can be constructed of reinforced beams or girders in an economical manner, when compared with structural steel beams and girders. Where light loads such as are occasioned by roofs, have to be carried, long steel trusses will, in most cases, be better. For heavy loadings reinforced concrete has been used up to 50-ft. spans in a great many instances, and there are several cases on record of concrete spans running up to 70 and 80 and to 112 ft. These are, of course, exceptional, and are merely cited to give an idea of the general adaptabil-

ity more and San Francisco tested concrete and found it good. Single fires like the Dayton Motor Car Works, the F. W. Tunnell Company, a glue manufacturing plant in Philadelphia, and the Pacific Coast Borax buildings, in Bayonne, N. Y., demonstrated the absolute safety of this material. The insurance rates applying on reinforced concrete buildings are as low as on any type of construction. In fact, some of the mutual fire insurance companies offer to write the lowest rates on concrete industrial buildings; lower, indeed, than on any other type of construction.

Where large plants are built of brick or stone the owner or architect may hesitate about using concrete construction, as it will contrast too sharply and be out of keeping with the other buildings. In such cases a skeleton of reinforced concrete can be erected and brick curtain walls filled in or brick bearing walls used. This scheme has been used on a great number of buildings throughout the country and has been found very satisfactory.

Comparisons of Cost.

In most instances the determining factor in the choice of structural material for a new building is the cost.

Reinforced concrete will generally run from 5 to 15 per cent. higher in first cost than first-class mill construction and from 10 to 20 per cent. lower than steel construction fireproofed. A large warehouse in Brooklyn was begun in May, 1908. At that time new construction work was scarce, and all contractors, both in the concrete and steel lines, figured very closely to secure the job. The successful reinforced concrete figure on this particular building was \$30,000 lower than the best bid received on the same plans executed in fireproofed structural steel. A large factory in Philadelphia was designed in steel and estimates received on the original plans. The architects considered an alternative in reinforced concrete construction and saved the owner \$60,000. A large publishing house and loft building was recently completed in Springfield, Mass., of reinforced concrete throughout, thereby saving \$40,000 over the probable cost in steel. These three instances represent, respectively, savings of 12, 25 and 10 per cent. In competition with mill construction the percentage depends almost entirely on the size of the building. For structures costing \$40,000 and less, and of the height of four stories or less, the brick and wood construction will run about 15 per cent. less than concrete. On larger buildings, however, concrete gets closer to the cost of the mill construction. The designers of a very large hardware building in Minneapolis were surprised to find that the estimate on reinforced concrete construction was slightly under that for mill construction. A similar case occurred in Toledo, Ohio. Both of these propositions, however, exceeded \$150,000 in value.

The initial cost should not be the only consideration. There are certain fixed charges which enter into the relative values of buildings. These may be briefly summarized as follows: Insurance, maintenance, depreciation, amount of light available, freedom from vibration, elimination of vermin and the assurance that a fire cannot destroy the building. It is difficult to put an exact monetary value on these items. Each plant manager would have his own views on the subject and local conditions would alter materially any assumptions. If, however, due consideration be given to the saving which can be obtained on each of these items by using a reinforced concrete building, it will generally be found that, even though the concrete structure cost, complete, 10 per cent. more than mill construction, there will be a saving annually of from $1\frac{1}{2}$ to 2 per cent.

The First American-made Bessemer Steel.

The following interesting historical statement is taken from the *Bulletin* of the American Iron and Steel Association for October 15:

As has frequently been explained in the *Bulletin* and in our other publications the first Bessemer steel that was made in this country was made at experimental works at Wyandotte, Mich., in September, 1864, under the direction of William F. Durfee, superintendent of the works. Mr. Durfee has described in the following words the quality of the steel which was made at Wyandotte in the year mentioned:

Various experiments were tried to test the ductility and working qualities of the steel produced at Wyandotte. Some of the early product was sent to Bridgewater, Mass., and there rolled into tack plate and cut into tacks which were pronounced to be very much superior to any previously made of iron. In order to test the welding qualities of the steel, John Bishop, the blacksmith of the works, made a tobacco pipe the size of an ordinary clay pipe, the bowl and stem of which were welded up of Wyandotte steel, and when perfectly polished there was no visible evidence of a weld. I have now two jackknives and a razor made from this steel; the knives are rather soft, but the razor was used regularly by my father for 15 years to his entire satisfaction.

The first Bessemer steel rails that were made in this country were rolled at the North Chicago Rolling Mill May 24, 1865, from ingots made at the experimental works at Wyandotte under the supervision of William F. Durfee. The rolls with which these rails were rolled had been used for rolling iron rails. The steel rails came out sound and well shaped. The American Iron and Steel Association was in session at Chicago at the time and several of its members witnessed the rolling of

the rails. John Fritz was also present and a witness of this most interesting and far reaching incident in our industrial history.

A Washburn Drafting Table.

The drafting table shown in the illustration has been added to the line of tables manufactured by the Washburn Shops of the Worcester Polytechnic Institute, Worcester, Mass. The white pine table top may be used as a drawing board and can be tilted to any angle. Cleats prevent warping of the top and are so arranged that they allow of shrinkage and expansion. Two cast iron brackets fastened to the bottom of the board swivel at



A New Drafting Table Built in the Washburn Shops of the Worcester Polytechnic Institute.

the end of the spindles. The swivels are clamped by two nuts operated by a small hand wheel directly below the board. The raising and lowering of the table to any desired position is accomplished by the hand wheel at the right hand standard, the method employed being a new one. Two pinions meshing into racks set in the spindles are keyed to the hand wheel rod. The spindles are locked automatically in position, but by turning the hand wheel in either direction the lock is released and the top raised or lowered. The device is simple and requires no adjustments. It has stood up under 1300-lb. load before slipping. Universal drafting machines and parallel rules may be used with the board.

The Great Lakes Engineering Works at Ashtabula.

—The location of a new shipbuilding plant in Ashtabula, Ohio, by the Great Lakes Engineering Works of Detroit has finally been assured. The voters of Ashtabula last week authorized the issue of bonds to the extent of \$390,000 for the purpose of improving the river, so as to make the site chosen for the shipbuilding plant accessible, and the shipbuilding company signed a contract binding itself to build the plant. The company is planning the expenditure of nearly \$1,000,000 for the construction of a complete shipbuilding and repair plant. As a part of the plant the company will build two 650-ft. concrete drydocks. Work will be started soon, and it is the intention to have the plant ready for operation in the spring of 1911.

The Standard Steel Car Company, Pittsburgh, is steadily increasing the number of employees at its steel car plant at Butler, Pa.; it now has close to 3500 men on its payrolls, and is turning out about 50 finished steel cars per day. Large plant improvements and additions are contemplated by the company, which, when completed, will give the works an output of about 100 steel cars per day.

The West Penn Steel Company, Brackenridge, Pa., has commenced operations in its new plant. The first shipment of sheet bars was made October 9.

Judicial Decisions of Interest to Manufacturers.

ABSTRACTED BY A. L. H. STREET.

Non-Resident Corporations—Interstate Commerce.—The State may exclude a non-resident corporation or may exact such security for the performance of its contracts with its citizens as in its judgment will promote the public interest, but all statutes imposing duties and obligations on non-resident corporations will be construed as not applying to corporations engaged solely in interstate commerce. The statute providing that no non-resident corporation shall prosecute a suit until it has complied with the law does not apply to a corporation engaged solely in interstate commerce, and it may sue without complying with the law. A non-resident corporation having no office or local agent or place of business in Colorado, but engaging merely in selling goods in Colorado through traveling salesmen, engages in interstate commerce, and it may sue for goods so sold and delivered without first complying with the statute regulating non-resident corporations. (Colorado Supreme Court, *Herman Brothers Company vs. Nasiacos*, 103 Pacific Reporter 301.)

Non-Resident Corporations—Failure to Take Out License.—A non-resident corporation, which has not obtained a license, as required by the Missouri statutes, may sue in that State on contracts made elsewhere or on contracts made there on its behalf by its traveling salesmen. Such a corporation, unable to sue for failure to take out a license, cannot cure the incapacity by thereafter taking out a license. An assignment of a Missouri contract in that State to a non-resident corporation actually transacting business there, without having obtained a license, is void, and the subsequent act of the corporation in taking out a license does not validate it. (Missouri Supreme Court, *Amalgamated Zinc & Lead Company vs. Bay State Zinc Mining Company*, 120 Southwestern Reporter 31.)

Corporations—Right to Purchase Own Stock.—In the absence of statutory prohibition, a corporation may purchase its own stock, hold it unextinguished and reissue it. The provision of the New York stock corporation law, authorizing a corporation to accept its own stock in payment of debts deemed bad, does not inferentially forbid it to purchase its own stock; but the inference, if any, is to the contrary. A purchase by a corporation of its own stock was legal, where no creditor was affected, the transaction was concurred in by all the directors and stockholders, and the stock was received by the corporation into its treasury for sale to others. A provision in incorporation articles or bylaws that a stockholder shall not sell without first giving the corporation and other stockholders opportunity to purchase is not invalid as against public policy. (New York Supreme Court, Trial Term, Fulton County, *Moses vs. Soule*, 118 New York Supplement 410.)

Corporations—Rights to Attack Legality of Organization.—One who deals with a corporation as a corporation is estopped in a suit growing out of the transactions so had from denying the legal existence of the corporation. (Georgia Court of Appeals, *Orr vs. McLeay*, 65 Southeastern Reporter 164.)

Compensation of Corporate Officers.—An officer of a corporation is not entitled to compensation, in the absence of an agreement securing it for his official services, though he owns nearly all of the stock. A corporation endeavoring to reduce profits realized by showing disbursements for an officer's salary has the burden of showing an agreement securing it. (New York Supreme Court, Appellate Division, First Department, *Gaul vs. Kiel & Arthe Company*, 118 New York Supplement 225.)

Corporations—Preferred Stock—Dividends.—Where preferred stock of a corporation was entitled to non-cumulative dividends not exceeding 7 per cent. per annum, payable out of any surplus net profits, and the common stock was entitled to dividends out of the surplus net profits remaining after payment of the dividends on the preferred stock, and the corporation accumulated a reserve fund, part of which was obtained by scaling down dividends which would otherwise have been paid on the preferred stock, the reserve fund, is so far as it was composed of funds which would have been paid as dividends on the preferred stock, had it not been reserved, could be used to pay subsequent dividends on that stock, though the portion of the reserve which would otherwise have gone to common stockholders could not be so used. (New Jersey Court of Errors and Appeals, *Bassett vs. United States Cast Iron Pipe & Foundry Company*, 73 Atlantic Reporter 514.)

Corporations—Rights of Promoters.—A promoter of a corporation is accountable to it as if the relation of principal and agent or of trustee and beneficiary had actually existed; and he is precluded from taking a secret advantage of other stockholders. Where a person has been induced by fraud to enter into a contract he may elect to rescind the

same if he can restore what he has received, and sue for the consideration he has paid, or, if he has not paid anything, repudiate the contract, and rely, when sued, on the fraud as a defense, or he may elect to retain what he has received, and bring an action for damages sustained by the deceit. Though the promoter through fraud secretly received a profit to which he was not entitled, on a recovery of such profit by the corporation, he is entitled as a creditor for money actually advanced to share in all the corporate assets. (Virginia Supreme Court of Appeals, *Jordan & Davis vs. Annex Corporation*, 64 Southeastern Reporter 1050.)

Bankruptcy—Corporations.—The Illinois statute providing that "if the indebtedness of any stock corporation shall exceed the amount of its capital stock the directors and officers of such corporation assenting thereto shall be personally and individually liable for such excess to the creditors of such corporation" gives a right of action against officers which belongs exclusively to creditors, and which is not an asset of the estate of the corporation in bankruptcy and does not pass to its trustee, but may be enforced by creditors as a secondary security independently of the bankruptcy proceedings. Under the Illinois statute it is competent for the directors of a corporation to accept merchandise in which the corporation is authorized to deal in lieu of cash in payment for capital stock, and such a transaction can only be impeached for actual fraud. (United States District Court, Eastern District of Wisconsin, in re *Beachy & Co.*, 170 Federal Reporter 825.)

Interstate Commerce—Restraint of Trade—Sales.—A contract made in Texas for the sale of goods to a resident corporation by a non-resident corporation to be shipped from a sister State to the buyer in Texas affects interstate commerce, and is not subject to the Texas anti-trust laws. A corporation engaged in the manufacture and sale of pottery in a sister State and a member of a trust contracted to sell and deliver pottery to a domestic corporation. The prices to be paid were regulated by the trust. The contract required the buyer, before being entitled to stipulated premiums, to confine its purchases of such goods for a period of one year to the seller, but there was no agreement whereby it forfeited any right on its failure to do so. Held, that the contract was not in restraint of trade and was not in violation of the Sherman anti-trust act. A buyer entitled to discounts on ordering a specified quantity of goods from the seller who fails to order such quantity is not entitled to the discounts. Where an order for pottery included all kinds of the seller's manufacture at 60 per cent. off, but it was customary in the trade and so understood by the buyer, if a 60 per cent. discount was agreed on, a corresponding discount of 10 per cent. was to be allowed on decorated goods, the buyer could not complain because the court did not allow 60 per cent. discount on decorated ware. (Texas Court of Civil Appeals, *Moroney Hardware Company vs. Goodwin Pottery Company*, 120 Southwestern Reporter 1088.)

Conditional Sales—Validity—Payment.—Where a conditional sale is made in one State, and contemplates or expressly provides that the property is to be delivered or used in another State, it is governed by the laws of the latter. In the absence of a fraudulent intent, a conditional sale reserving title to the goods in the seller until the price is paid is not invalid as against creditors or purchasers because the goods were furnished for resale. A conditional sale contract required payment in 10 days either in cash or notes, declaring that all notes and open accounts shall be drawn payable at Oklahoma City, with 10 per cent. attorney's fees added, and that on default in the payment of any installment the seller might consider the entire indebtedness due; that the title to and the ownership of all the goods should be in the seller until the buyer's indebtedness had been paid in money. Held, that the word "money" was used in contra-distinction to "notes," and did not include notes, so that the acceptance of notes did not constitute a payment sufficient to vest title to the goods in the buyer. (United States District Court, Eastern District Oklahoma, in re *Gray*, 170 Federal Reporter 638.)

Sales of Machinery—Duty to Remedy Defects.—Where machinery purchased for a particular use is so defective in design or construction, or both, as to be incapable of rendering the service contemplated by the contract, the obligation rests upon the seller to ascertain the nature of the defects and to cure them. (Louisiana Supreme Court, *Woodward, Wight & Co., Ltd., vs. Engel Land & Lumber Company*, 49 Southern Reporter 719.)

Sales—Breach of Warranty—Rights of Buyer.—Under a contract of sale of machine, by which the seller "agrees and binds itself to take back said machinery and to refund" the purchase money, if the machinery fails to do as guaranteed, the purchaser, finding on a bona fide test that it is not according to warranty, and notifying the seller thereof, and that he declines to accept it, may sue for the purchase money, without returning or offering to return the machine; the seller, however, having a right to retake it. (Supreme Court of Arkansas, *Chicago Pneumatic Tool Company vs. Sims*, 119 Southwestern Reporter 1118.)

The New York High Pressure Fire Service.*

Description of Pumps and Pumping System, with Results of Tests.

BY PROF. R. C. CARPENTER, CORNELL UNIVERSITY.

The high pressure pumping system installed for fire service in the city of New York protects the district extending north from City Hall to Twenty-fifth street, and east, approximately, from the North River to Second avenue. It comprises about 55 miles of extra heavy cast iron main, from 12 to 24 in. in diameter, with 8-in. hydrant branches; and two pumping stations so located that they never can be in the center of a conflagration. At the present time the pumping stations have a com-

056,928 gal. was river water. The daily average use of Croton water, therefore, for the above five years was 117,000 gal. For the Borough of Brooklyn the average for five years was 43,705,568 gal., of which 19,010,928 gal. was river water; daily average, 67,000 gal. During these five years the greatest quantity used in the Borough of Manhattan was 99,000,000 gal. in 1901, which included 69,500,000 gal. of river water, leaving 29,500,000 gal. for fresh water, and Mr. de Varona states (Report of the Department of Water Supply, Gas and Electricity): "Even if this quantity be made 100,000,000 gal. per year, by comparing it with the average daily consumption of about 300,000,000 gal., it will be seen that the total amount used for fire purposes would be only about one-third the amount used for all purposes in 24 hours, forming, therefore, an insignificant percentage of the total consumption. The quantity needed for fire purposes (one-tenth of 1 per cent.) may therefore be entirely

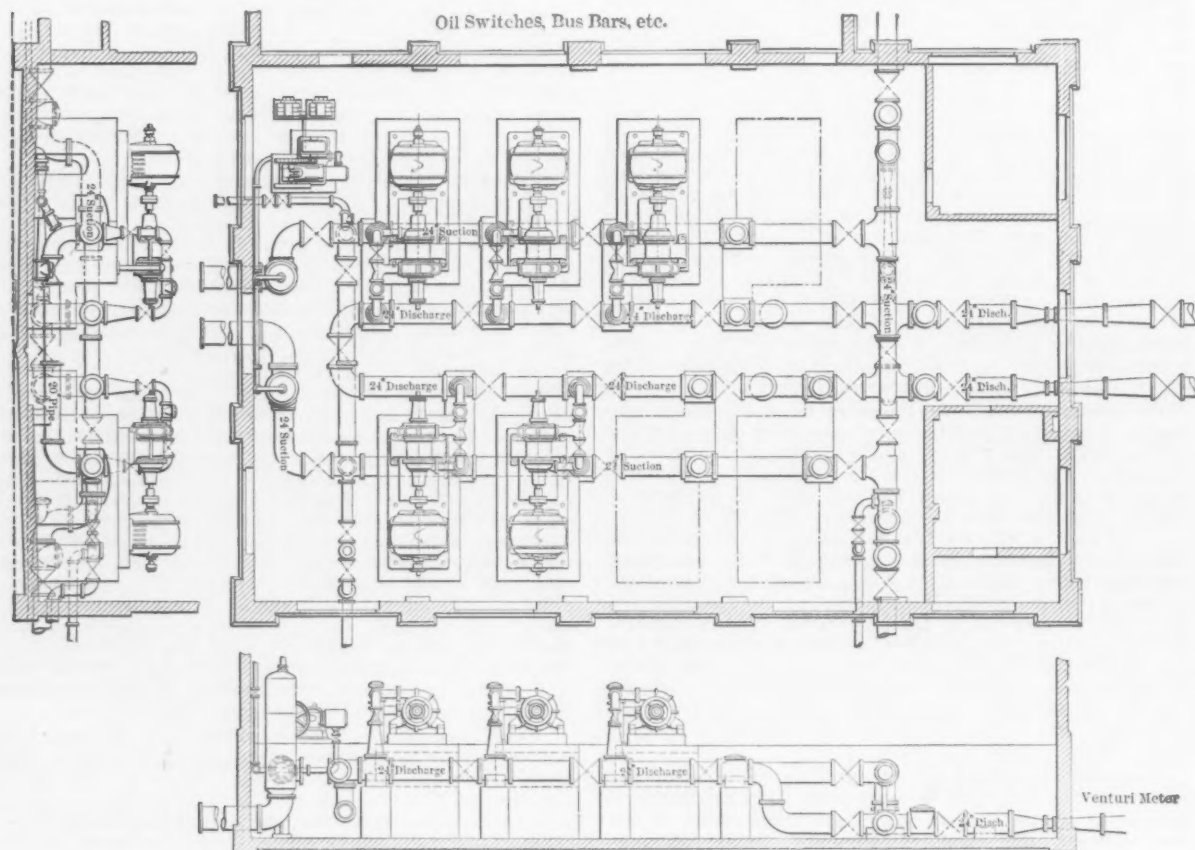


Fig. 1.—Plan and Elevations Showing Arrangement of Machinery and Piping in Pumping Stations.

bined capacity of over 30,000 gal. per min., delivered at a pressure exceeding 300 lb. per square inch.

The Source of Water Supply.

The supply of water is ordinarily obtained from the water mains of the city, which deliver water to the stations at a pressure of 14 to 40 lb. per square inch, depending upon the demand for water in that district. Both of the pumping stations are located close to tidal water and connections are made so that sea water can be obtained in case of difficulty. The amount of water required for fire purposes is only a small percentage of that consumed for the daily supply of the city, and its use for fire protection makes no material difference from financial or insurance standpoints.

Water Required for Fire Purposes.

The general impression that an enormous quantity of water is required for fire purposes is erroneous, as shown by figures furnished to Chief Engineer I. M. de Varona by the Fire Department for the boroughs of Manhattan and Brooklyn. These give the average quantity of water used for fire protection during five years in the Borough of Manhattan as 74,010,803 gal. per year, of which 31,-

neglected as a factor in determining the water supply of the city.

The capacity of each of the pumping stations will be for the present 15,000 gal. per minute, or 43,000,000 gal. per day for the two stations. By the installation of three additional units in each station, for which provision is made, this capacity can be increased in round numbers to 69,000,000 gal. per day. The two stations, with the motors and pumps as installed, have a total capacity in excess of that of all the fire engines in the boroughs of Manhattan, the Bronx and Brooklyn working under normal conditions.

The power for driving the pumps is transmitted electrically from several of the electric power and lighting systems located on Manhattan Island. As the stations of systems are widely separated and any or all of them are available for motive power the system of electric transmission was considered more reliable in the case of a large and general conflagration than power plants maintained directly at the pumping stations. Each station is provided with two independent sets of transmission lines located as far as possible beyond danger of injury in case of a great conflagration. The pumping stations are connected to 18 substations, equipped with rotary converters and storage batteries, aggregating a capacity of

* From a paper presented before the American Society of Mechanical Engineers, in New York, October 12, 1909, and printed in the *Journal* of the society, September, 1909.

124,000 ampere hours at 135 volts, an enormous reserve. Each station is connected with the main stations of the Edison Company by two 250,000 cm. three-phase cables laid in ducts, and two independent reserve feeders extend to the substation system of the Edison Company. With all these precautions interruption of the power supply would seem a physical impossibility.

The Distribution System.

The pipes, castings and hydrants were tested at a pressure of 450 lb. The specified allowance for leakage in a 10-min. test was at the rate of 4 gal. in 24 hours for each lineal foot of pipe joint, equivalent to a leakage of 487,000 gal. for the whole system in 24 hours, which is somewhat over 1 per cent. of the total specified pumping capacity now installed. The actual leakage on test was at the rate of 264,000 gal. per day, or about six-tenths of 1 per cent. of the pumping capacity. Considering the difficulties of construction and the high pressure the results attained were remarkable and reflect great credit on the engineer in charge.

There are sufficient hydrants so that if a block were on fire 60 streams of 500 gal. per minute each, or the full capacity of both stations, could be concentrated on a

times and avoiding the possibility of a break in the suction caused by air getting into the suction lines. On the river end of this suction there are constructed heavy bulkhead screens and in the suction chamber are two sets of bronze screens, which are readily accessible for cleaning. From the suction chamber there are taken two 30-in. flanged mains to the duplicate set of mains in the pumping station proper. The vacuum in these 30-in. pipes is maintained by automatic electric vacuum pumps located on the pump room floor of the station.

The two stations, known as the Gansevoort pumping station, located near Gansevoort Market on the North River, and the South street station, located on the corner of Oliver and South streets, near the East River, are identical in construction and equipment. The buildings are of simple design, of steel fireproof construction, with concrete foundations. The Gansevoort street building, which is typical of both, is one story high, with basement, 63 ft. 8 in. by 97 ft. 4 in. Each station is large enough for eight pumping units.

At the Gansevoort street station the fresh water supply is derived from two 30-in. mains. The salt water suction lines for this station are practically identical with those for the South street station except that the 36-in. lines from the North River to the station are 650 ft. long.

Machinery.

There are now five units in each station, consisting of Allis-Chalmers five-stage centrifugal pumps driven by Allis-Chalmers induction motors and the necessary auxiliary machinery. The motors and pumps are alike and their parts are interchangeable. The pumps each have a specified capacity of 300 gal. per minute of sea water, working with a suction lift of 20 ft. and a delivery pressure of 300 lb. per square inch. The actual capacity as indicated by a 24-hour test was about 30 per cent. in excess of that specified.

The floor plans of the buildings and general layout of machinery, piping, switchboards, &c., are shown in Fig. 1. As will be seen space is provided for three additional units. The motors and pumps, with suction and delivery branches, are located on the main floor of the pump room, as shown in Fig. 2. The switchboard and switchboard apparatus are placed in an inclosed two-story and basement gallery. The operating switchboard is conveniently located in the inclosing wall of the gallery and is so placed as to allow a man standing on the pump room floor to perform all the operations necessary for controlling the apparatus in the station. The bus bars, with their fireproof compartments, are placed on the second floor of the gallery.

Each pump is direct connected to its motor by a flexible coupling which takes care of any variation from alignment. The motors are of the constant speed induction type, three-phase, 25-cycle, 6300 to 6600 volt, designed to operate at about 740 rev. per min. The specifications required the motors to have sufficient starting torque to attain full speed between 30 and 45 seconds after starting, with a current not exceeding 150 per cent. of that used when the motor is working under full speed. Each motor was required to develop not less than 800 b.h.p. when using current of 6300 volts, 25 cycles, and under these conditions to have an efficiency not less than 92 per cent., a power factor not less than 93 per cent. and a motor slip not in excess of 2 per cent. At three-quarters load the efficiency was not to be less than 92 per cent. and the slip not to exceed 1.5 per cent. It was specified that the temperature of the motors should not rise more than 40 per cent. on a 24-hour test at full load, when measured by a thermometer, the air in the room being 25 degrees C. Prof. Geo. F. Sever of Columbia University tested two of the motors in the shops of the contractor and found them to meet the specifications and

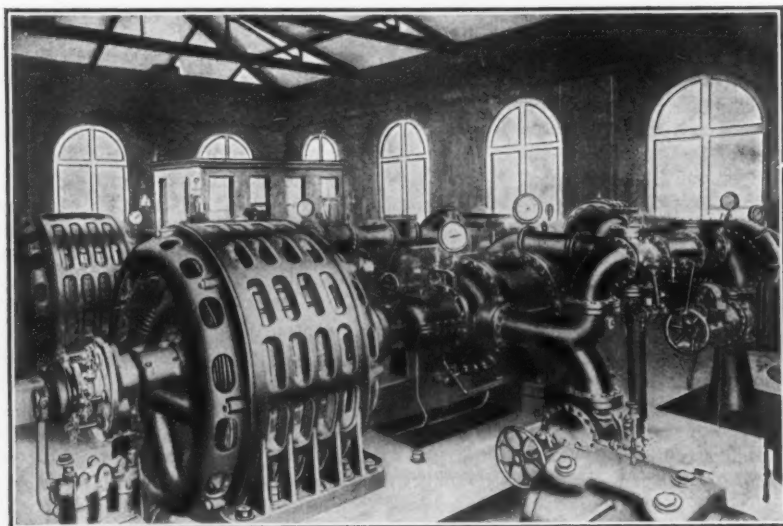


Fig. 2.—A View in One of the Stations.

block with a length of hose not exceeding 400 to 500 ft., assuming the use of 3-in. hose and 1½-in. nozzles.

The layout of the mains at the stations both for suction and delivery is on the loop system—that is, the supply can be taken from either one of two mains, and the discharge is through either one or both of two mains. With this system even the breakdown of one of the discharge mains at the station would only slightly reduce the pressure at the fire and would not affect the capacity of the station, as the pumps would be capable of forcing their full discharge through the short length of a single 24-in. main made necessary by such an accident.

The mains are of cast iron, bell and spigot pipe, of the thicknesses given in the following table:

Size of pipe. Inches.	Thickness. Inches.	Unit tensile strain with 300 lb. pressure.	Factor of safety.
24	1¾	1,920	0.4
20	1½	2,000	10.0
16	1¼	1,920	10.4
12	1	1,800	11.1
8	¾	1,371	14.6

* Used only for hydrant branches.

Supply Piping.

At the South street station the fresh water supply is derived from two 30-in. lines. The two main feeders to which the two 30-in. lines are connected increase to 48 in. in diameter and extend independently and directly to the Central Park reservoir. An auxiliary salt water supply, consisting of two 36-in. pipes about 140 ft. long brings the salt water from the East River to a suction chamber located directly in front of the pumping station. This suction is so constructed that the pipes are always below mean low water, thus insuring a supply at all

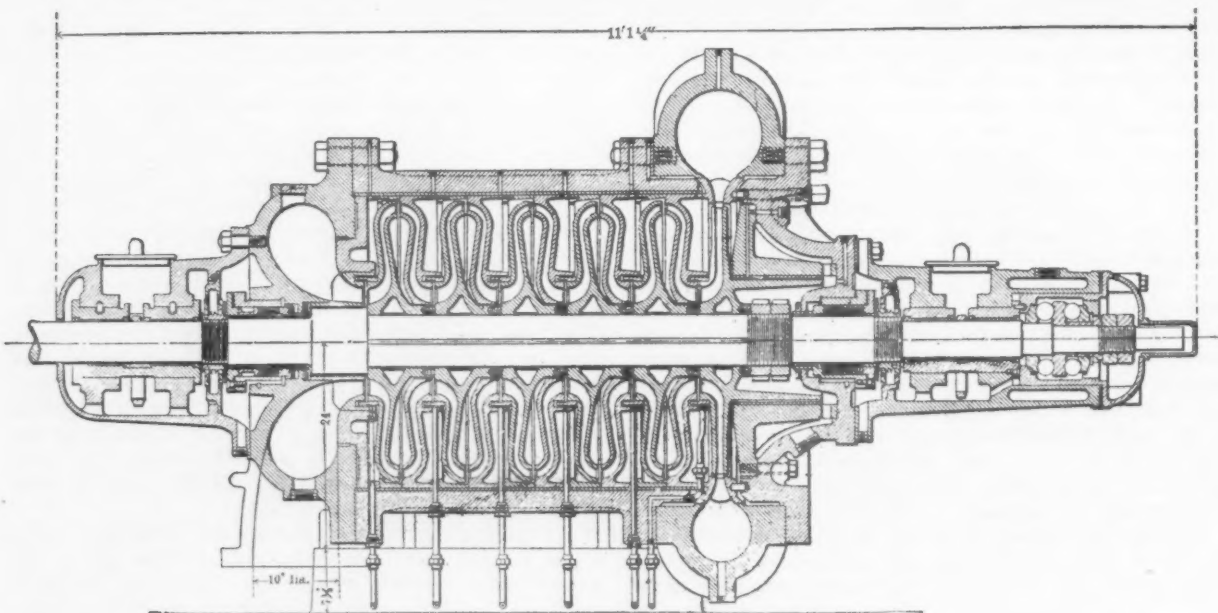


Fig. 3.—Axial Section of a Five-Stage High-Lift Centrifugal Pump.

to have a full load efficiency of 93.2 per cent. The other motors were inspected and found to be alike and were assumed to have the same efficiency. The motors were also tested for temperature rise at the time of the official test to be described later.

Direct current motors of 240 volts are provided to operate the various gate valves in the station and the piston pumps employed for maintaining a vacuum on the salt water suction lines.

The type of pump is the simplest now on the market for pumping water either against a high head or low head, and this simplicity was the deciding factor which led to the selection of this style of machinery. The pumps are water balanced by a piston connected to the last impeller and upon which the water pressure acts, but should any additional end thrust occur, it would be taken up by the ball bearing provided in the outboard bearing. This ball bearing consists of two rings of 1 1/2-in. diameter steel balls and is water cooled. The balancing piston is fitted very loosely in order to keep the friction losses small, and as a result a considerable amount of water leaks past it into a chamber at the end of the pump, which is provided with a discharge pipe and valve leading into the suction. By adjusting the valve in this pipe the difference of pressures on the piston can be

regulated as desired. The bearings are of the ring oiled type and are separated from the pump casing by packing glands which prevent foreign matter from entering the bearings. The impellers are of bronze and the shaft of forged steel. All parts of the runners and diffusion vanes are thoroughly lubricated by oil cups on the base of the pumps, as shown in Fig. 3. Each combined unit is equipped with automatic and hand control. The pumps are kept primed for instant service and the simple operation of a switch on the main switchboard starts the machine and gives full pressure in about 30 seconds.

A combined regulating and relief valve is interposed between the discharge pipe and the suction pipe of each pump, and set to regulate the discharge of each pump to any predetermined pressure. When the volume of the water discharged by the pump is in excess of that forced into the system, this valve acts as a relief valve and bypasses this excess into the suction to the pump, the pressure on the main distribution system remaining at the predetermined point. When no water is forced into the distribution system all of the water discharged from the pump is then by-passed into the suction. The pressure regulating valves were made by the Ross Valve Mfg. Company, Troy, N. Y., and much of the practical success of the station has been due to the accuracy with which they maintain any desired pressure.

The priming apparatus in each station consists of three motor driven vacuum pumps, each arranged to maintain automatically a vacuum of 26 in. in the suction lines. These pumps are of the piston single action type, one having a displacement capacity of 300 cu. ft. per minute for a piston speed of 200 ft. per minute, and each of the others a displacement capacity of 50 cu. ft. with a piston speed of 160 ft. per minute.

An air collecting chamber is connected to each of the salt water suction lines and equipped with water gauge glass and vacuum gauge. The air suction piping between the air chambers and the air pumps is provided with a vertical loop sufficiently high to prevent water being carried over to the pumps. The air pumps are interconnected to each air chamber.

Venturi meters for measuring the discharge of water from the station and from one main to the other were set by the contractor on each discharge main and on the

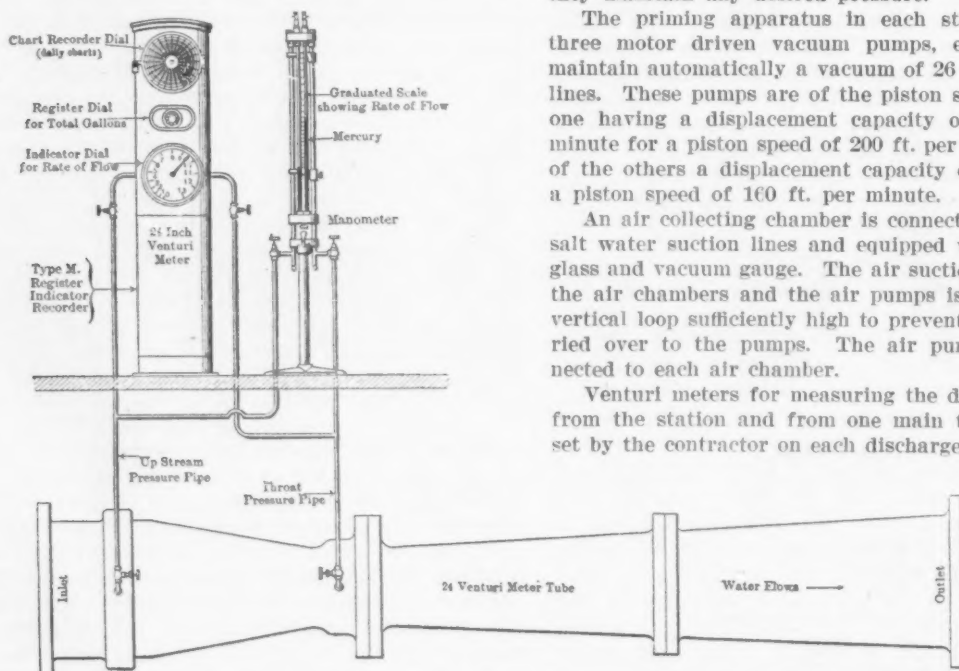


Fig. 4.—Arrangement of Manometer and Its Connections to the Venturi Meter.

cross connecting main. The meters of the discharge main are 24 in. in diameter and on the crossover main 12 in. in diameter. These meters were standardized under the direction of F. N. Connet, chief engineer of the Builders' Iron Foundry, Providence, R. I., and were provided with dial indicating gauges and also chart recorders graduated to indicate the flow in gallons per minute; and in addition with an integrating meter which registers the total flow in gallons.

The readings during the test were taken by a mercury manometer, graduated to show the capacity in thousands of gallons per minute. For this purpose a Venturi manometer was attached with a temporary connection to each of the 24-in. Venturi tubes. The manometer gave essentially the same reading as the indicating dial on the main register. The Venturi manometer is practically a tube partly filled with mercury, one side of which communicates with the upstream pressure chamber of the meter tube, while the other communicates with the throat pressure chamber. The connections with the manometer are indicated in the diagram, Fig. 4. The sketch shows a 24-in. high pressure meter tube, its register indicator recorder and manometer. The instruments and meter tube are drawn to scale, but in the pumping station the meter tube is about 75 ft. distant from the instruments.

Tests of Machinery.

The specifications for the pumping system provided for an endurance test of each motor and pump lasting 24 hours without stop, during which time the capacity and efficiency of the pumps and motors was to be determined. The tests were to be in charge of an expert appointed by the commission. The specifications provided for making the test with sea water, but this was later changed to a test with Croton water under the conditions of actual use. In view of this change the contractor increased the efficiency guarantee from 70 to 71 per cent.

The original specifications called for a capacity of 3000 gal. of sea water per minute against a discharge pressure of 300 lb. per square inch and a suction lift not exceeding 20 ft. The total increment of pressure is equivalent to 308.66 lb. from the intake to the delivery side. The Croton pressure varies at the stations in different parts of the day from about 40 lb. to 13 lb. per square inch and is affected by the amount of water being drawn from the mains. Consequently, to meet the requirements, the delivery pressure would need to be 308.66 lb. in excess of the intake pressure. There is also a further correction from the fact that sea water is

and its capacity not less than 3000 gal. of sea water when lifted to a pressure equivalent to 308.66 lb. To determine whether the requirement was met, a separate test of each pump was required. The efficiency of the pumps was computed by dividing the horsepower output of the pumps by the horsepower input as received from the motors. The horsepower input was computed as follows:

hp. input = $\frac{\text{total watts}}{746} \times \text{efficiency of motors (93.2 per cent.)}$.

The horsepower output was computed as follows:

hp. output = $\frac{\text{wt. per gal. (8.34} \times 2.31 \text{ head in lbs.} \times \text{no. of gal. per min.)}}{33,000}$

Conclusions and Results of Tests.

The endurance test in each station showed that the capacity, efficiency and pressure exceeded the contract requirements by a large margin, and that during the endurance test no mechanical or electrical defects were observed. During the test of the South street station one of the pumps was stopped for half an hour to repair the motor insulation, while during the test of the Gansevoort station no stop of any kind was made. The bearings in both stations were in perfect condition at the end of the test and the temperature of the motors not sufficiently high to interfere with the continuous operation for a longer period. Apparently the endurance test could have been continued indefinitely without injuriously overworking or overloading the pumps and motors. The specifications call for pumping sea water, which most authorities consider to be approximately 2.5 per cent. heavier than fresh water. The effect of substituting sea water for fresh water would, for the same horsepower delivered by the motor, have been to reduce the capacity of the pump by about 2½ per cent. without sensibly affecting the efficiency. Because of the large capacity over contract requirements shown by each pump, this amount does not materially affect the results.

The data and results of the tests at the two stations are given concisely in the following tables. The efficiency is given as computed for each hour and shows a slight variation, which probably can be accounted for by changes in the amount of water leaking past the balancing piston. The individual pump test at the South street station showed a variation in efficiency 70 to 77 per cent., and at the Gansevoort station 76 to 79 per cent. This variation may have been due to the structure of the pumps, but in my opinion is more probably due to variable leakage past the balancing piston or through the relief valves. Pump No. 6 at the Gansevoort station was tested with varying openings of the valve in the discharge pipe. The results are shown in Table No. II and also in Fig. 5.

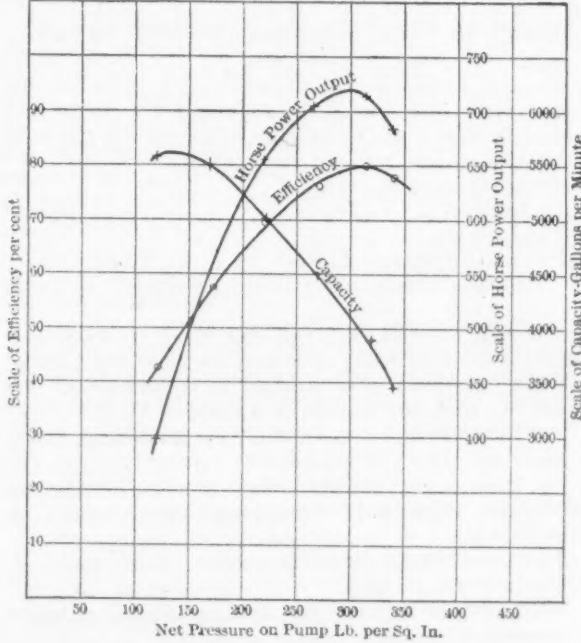


Fig. 5.—Characteristic Curves of the Pump, for Varying Discharge Pressure.

heavier than fresh water and this correction under maximum conditions might amount to 2.5 per cent.

The modified specifications also required that the efficiency of each pump should be not less than 70 per cent.

OLIVER AND SOUTH STREET STATION, SEPTEMBER 3, 1908

Time	No. of pump	Gal. per min.	Pressure delivery	LB. PER SQ. IN.		h.p. output	Efficiency of pump
				Inj.	Net		
12:58-1:14	1	3372	344.4	29.3	315.1	620	74.6
1:22-1:37	2	3800	338.0	27.9	308.1	683	70.1
1:43-1:58	3	3495	334.0	28.7	305.3	623	73.2
2:03-2:18	4	3705	334.5	27.8	306.7	662	76.0
2:24-2:38	6	3740.7	344.5	28.8	315.7	689	77.0

Immediately following the 24-hr. test for capacity.

Table I.—Tests of Individual Pumps.

/ GANSEVOORT AND WEST STREET STATIONS, SEPTEMBER 6, 1908

Time	No. of pump	Elect. h.p. input	Gal. per min. Hg. Col.	Pressure delivery	Lb. per sq. in.	Sq. in. Net	h.p. output	Efficiency of pump
10:05-10:31	1	916	3800	356.8	35.4	321.4	711	77.6
10:36-10:51	5	877	3800	350.8	35.1	315.7	700	70.6
10:54-11:12	3	920.5	3820	350.4	34.1	316.3	703	78.0
11:17-11:30	4	892	3751	352.5	35.6	316.9	695	77.7
11:37-11:53	6	869	3880	350.9	35.2	315.7	714	79.4
11:55-12:06	6	880.3	3457	376.1	36.0	340.1	685	77.9
12:03-12:07	6	929	4300	304.4	34.6	260.8	708	76.1
12:09-12:13	6	946	5079	255.6	33.6	222.0	654	69.4
12:24-12:28	6	952	5500	207.4	33.2	174.2	559	58.7
12:32-12:36	6	927	5286	186.2	33.2	122.0	367	42.8

Immediately following the 24-hr. test for capacity.

Table II.—Tests of Individual Pumps.

Practical Results from the New System.

The high pressure fire system in New York, which was put officially into service on July 6, 1908, has been successfully operated at many fires, but it had a crucial test

on January 7, 8 and 9, 1909, when it was brought into service for five simultaneous fires, three of them of more than the usual extent and activity, and one particularly so. Information upon the results attained with the system and the amount of water consumed was given by Chief Engineer I. M. de Verona and published in the *Engineering News* of February 11, 1909.

The fires occurred at Hudson and Franklin streets, Hester street and the Bowery, Houston street and Broadway, Sixth avenue and Seventeenth street and Houston street and the Bowery. The situation became so dangerous that every engine south of Thirty-seventh street, or 40 engines, were summoned, as well as a force consisting of 12 battalion chiefs and more than 600 men, but there was no need to use a single one of the engines. As the violence of the fires increased additional pumps were brought into service, so that at one time four pumps and motors were in commission at the South street station and three pumps at the Gansevoort street station, delivering 35,500 gal. per minute against an average pressure of 225 lb. at the pumps and 205 lb. at the hydrants. During the operation of the pumps 14,095,000 gal. were pumped as recorded by the meters, and the current used was 81,450 kw. hours, the cost of which was \$1222.

NOTE.—The high pressure system was designed by I. M. de Varona, chief engineer of the Department of Water Supply, Gas and Electricity of New York. It was also constructed under his supervision. The construction of the electrical machinery was supervised by Prof. Geo. F. Sever as consulting engineer. The details of construction were in charge of Thomas J. Bannon, John P. Reynolds and Henry B. Machon, assistant engineers of the department. The machinery of each station was designed and erected by the Allis-Chalmers Company of Milwaukee.

The New York Electrical Show.

The Electrical Show held from October 11 to 21 in Madison Square Garden, New York, which was the third annual event of the kind, had, in addition to the usual popular features and displays of household electrical goods, considerable interest to the general machinery trade, as numerous companies making industrial equipment took occasion to exhibit their wares and appliances. In consequence many machinery men and others interested in industrial affairs visited the show and found much to attract their notice.

The American Metal Hose Company, 173-177 Lafayette street, New York, displayed a line of flexible metal conduits in steel, brass and copper adaptable for steam pressure, oil or compressed air service. The line of flexible metal tubing shown by the company ran from the smallest known sizes up to hose calculated to stand pressure up to 10,000 lb. per square inch.

The Crane Company, Chicago, exhibited a 6-in. steel gate valve electrically operated with near and remote control, a 6-in. emergency butterfly valve with electrical release, in addition to other valves, such as stop and check valves, traps, flangings and connections, &c.

The Electrical Testing Laboratories, East End avenue and Eightieth street, New York, showed a line of testing devices used for testing electrical instruments, tensile strength of metals, &c.

The Electrical Storage Battery Company, Philadelphia, Pa., showed a line of storage batteries, and the Excello Arc Lamp Company, 30 and 32 East Twentieth street, New York, made a special exhibit of flaming arc lamps designed for industrial plants.

Fox Brothers & Co., 126-130 Lafayette street, New York, displayed the polar flaming arc lamps, a line of constant couplings and the Fox safety windlasses.

Another flaming arc lamp exhibit was that of the German-American Electrical Company, 120 West Fourteenth street, New York, which also displayed a line of tungsten lamps and carbons for electrical appliances.

The General Electric Company, Schenectady, N. Y., exhibited small motors in addition to electrical heating apparatus, and the Heany Fireproof Wire Company, 25 Broad street, New York, displayed tungsten lamps and a line of fireproof wire.

An interesting exhibit was that of the Goulds Mfg. Company, Seneca Falls, N. Y. At this company's booth was shown in operation a 2 x 3 in. power pump electrically operated by belt to a 220-volt direct current motor and discharging automatically into a large tank. In the tank was a float switch arrangement which governed the running of the pump. In other words, the pump was started and stopped by the rise and fall of the water in the tank.

The H. Krantz Mfg. Company, New York, showed a line of switchboards, panel boards and accessories, and the Otis Elevator Company, New York, exhibited a model push button control elevator in operation.

The Southern Exchange Company, 97-101 Warren street, New York, exhibited a line of overhead wooden construction material, including bolts and cross arms for transmission service.

The United Electric Light & Power Company had one of the largest exhibits in the show. In addition to displaying a line of electrical household appliances, the company exhibited a Lidgerwood hoist made by the Lidgerwood Mfg. Company, and a concrete mixer which is controlled by W. V. Johnson & Co., 1 Madison avenue, New York.

The Watson-Stillman Company, New York, displayed an interesting line of hydraulic tools, including a hydraulic shaft straightener, a shop jack and a line of twin volute turbine pumps.

A complete line of small power motors was shown by the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., in connection with a display of electric fans and household utensils.

The Vacuum Engineering Company, 114 Liberty street, New York, displayed a line of vacuum pumps, and Stanley & Patterson, 23 Murray street, New York, showed a wireless battery system.

The Wonderful Pump Company, 50 Church street, New York, exhibited a model of its line of pumps which are made from 1/8 in. to 30 ft. in diameter, and are adaptable for pumping work, ranging from house service to irrigation work.

A model of the Lenix drive, which is a new form of belt drive brought out by F. L. Smidth, 50 Church street, New York, was one of the most interesting exhibits to machinery men, and diagrams explaining the working of the drive were distributed by the operator.

American Electrochemical Society Papers.

On the programme of numerous papers to be presented at the sessions of the American Electrochemical Society in New York, October 28 to 30, are the following of interest to the iron and steel trades:

Saturday morning session:

"The Laws of Electrode Losses in Electric Furnaces," by Carl Hering.

"Furnace Electrode Losses," by C. A. Hansen.

"Electrode Losses and Furnace Efficiency," by E. F. Roerber.

"A New Method of Measuring Mean Thermal and Electrical Conductivities of Electrodes," by Carl Hering.

"The Practical Conductance of Electrolytes," by Joseph W. Richards and W. S. Landis.

"A New Theory of Corrosion," by Maximilian Toch.

Saturday afternoon session:

"A Process for Simultaneously Cleaning, Annealing and Zincing Wire by Electrochemical Cementation," by Alfred Sang.

"Alloys of Copper with Electrolytic Iron," by C. F. Burgess and James Aston.

"An Electric Furnace for Production of Pig Iron," by Edward R. Taylor.

The McVoy Sheet & Tin Plate Company, 21 to 25 Michigan street, Chicago, announces that the demand for its stock list of tin plates issued September 7 was so heavy that it decided to put out its October list in book form. This list is in the interest of those who desire immediate shipments.

PERSONAL.

The district sales managers of the Republic Iron & Steel Company gave a complimentary dinner to Severn P. Ker at the Duquesne Club, Pittsburgh, on the evening of October 9. Mr. Ker retired from this company as general sales manager October 1, and has connected himself with the Sharon Steel Hoop Company, Sharon, Pa. He was presented by his former associates with a gold watch and chain. John A. Topping, chairman of the board of the Republic Company, acted as toastmaster and a number of felicitous addresses were made.

James A. Rae of the firm of Nell, Auld & Co., Buenos Ayres, Argentine Republic, is in the United States arranging additional connections for his house. Neil Auld & Co. engage generally in the machinery, mill supply and allied trades.

B. F. Jones, Jr., president of the Jones & Laughlin Steel Company, has returned from Europe.

B. W. Vallat has joined the staff of the Northwestern Iron Company, Mayville, Wis., to which he brings experience gained with the Colorado Fuel & Iron Company.

John W. Good succeeds R. E. DeWeese, recently resigned, as treasurer of the Lucas Pump Company, Dayton, Ohio.

The Bethlehem Steel Company, South Bethlehem, Pa., has secured the services of M. H. Anderson, superintendent of the Reliance Works, Milwaukee, who assumes his new position November 1 in a similar capacity.

H. F. Brandes, for many years connected with the Bullard Machine Tool Company, Bridgeport, Conn., in the capacity of superintendent, has severed his connection therewith and taken up the active management of the Springfield Mfg. Company of the same city, maker of special grinding machinery and emery wheels, which business he has purchased from Geo. W. Jackson, who now retires therefrom.

L. G. Kibbe has resigned as treasurer of the Wheeler Condenser & Engineering Company, Carteret, N. J., in order to take an active part in the management of the Warren Steam Pump Company, Warren, Mass.

Robert Geddis, assistant general manager of sales of the Jones & Laughlin Steel Company, Pittsburgh, in charge of the hot rolled department, has returned from a visit to the Pacific Coast.

W. S. Howe, formerly advertising manager and in charge of the small tool sales department of the Canadian-Fairbanks Company, Ltd., Montreal, with branches in principal Canadian cities, has become associated with the S. A. Woods Machine Company, Boston. Mr. Howe was with this company for about 10 years previous to his entrance into the Canadian field. During the past few years the S. A. Woods Machine Company has reduced its line from a great variety of woodworking machines to planers. As a result of this specialization the machines have attained a degree of efficiency which would not otherwise be possible.

Edward V. d'Inwillers, geologist and mining engineer, 506 Walnut street, Philadelphia, has been appointed by Governor Stuart a member of the Contour Topographic and Geological Survey Commission of Pennsylvania.

W. S. Pilling, of Pilling & Crane, Philadelphia, Pa., has returned from a month's vacation, during which he traveled extensively on the Pacific Coast.

The Northern Iron Company has appointed J. Earle Thropp, Jr., acting manager of its blast furnace at Standish, N. Y., during the temporary absence of its manager, L. P. Ross.

Peter Eyermann has resigned his position with the Du Bois Iron Works, Du Bois, Pa., as chief engineer, and accepted an engagement with the famous Austrian steel works at Witkowitz, Austria. The Witkowitz Works intends to build large new plants and contemplates making arrangements with American inventors for the adoption of their methods of operating blast furnaces and manufacturing steel and will probably purchase Ameri-

can equipment. Mr. Eyermann intends to make an early tour through the most important American mills and machinery establishments in the interest of his new connection. He will appreciate catalogues and other information along these lines. He has for many years been an American citizen, but is a native of Austria.

H. F. Hoewel has become a director of the Wiener Machinery Company, 50 Church street, New York, and has been elected vice-president and secretary. He is a graduate of the University of Charlottenburg, member of the German Society of Engineers and of the Society of German Steel and Iron Men. Before coming to America he was connected with the Siemens-Schuckert Electric Works.

J. P. Nicholas, New York, has resigned as assistant general manager of sales of the Lackawanna Steel Company to become vice-president of the Lackawanna Bridge Company, whose plant is now under construction at Buffalo. The change became effective October 15. Offices of the Lackawanna Bridge Company will be opened in the Hudson Terminal Building, 30 Church street, New York.

Activity at the Canadian Head of the Lakes.

TORONTO, October 16, 1909.—It is stated by Hugh Sutherland, executive agent of the Canadian Northern Railway Company, that the Atkocan Iron Company, after extended experiments, has solved the problem of the economic treatment of the hard sulphurous ores of the Atkocan range and is now able to produce a high quality of pig iron at a cost as low as that at which similar iron is produced at any other place in Canada. These ores, Mr. Sutherland said, had been condemned at the outset by experts of the United States Steel Corporation. It will not be long, he promises, until subsidiary industries will follow the successful making of pig iron at Port Arthur. Dlx Fraser, manager of the Atkocan Iron Company, was in Toronto last week. He says that contracts have been made for all the pig iron that can be shipped before the close of navigation and that the plant will be run all winter up to its full capacity.

Preparations for building the Dominion Ore Company's dock at the head of Thunder Bay, 22 miles from Port Arthur, have been begun. It is expected to be sufficiently advanced for the shipping this fall of 10,000 tons of ore to furnaces at Dunbar, Pa.

In the season of navigation that is now approaching its close 80,000 tons of rails have been delivered at Port Arthur and Fort William. Most of them come from the mills at Sault Ste. Marie, and are for the Canadian Pacific, Canadian Northern and Grand Trunk Pacific railroads. No less than 10,000 tons of barbed wire has been transshipped this season from vessels to railroads at the Canadian head of the lakes.

Real estate men in Fort William and Port Arthur report a good many inquiries from manufacturers and jobbers for locations for new buildings. It appears to be felt that the head of the lakes is a strategic point for distribution in the expanding market of the Canadian West; hence the desire by Eastern manufacturers to establish branch works and warehouses. In the season of navigation, when the low water freight rates can be taken advantage of, Eastern manufacturers could forward products to their warehouses at the head of the lakes and have stock for distribution thence all the year round.

C. A. C. J.

The American Iron and Steel Association is at work on a Supplement to the 1908 edition of its Directory to the Iron and Steel Works of the United States. The Supplement will note all changes made since the 1908 edition appeared in the officers of companies manufacturing pig iron, steel ingots and castings, railroad iron and steel, tin plates and terne plates, and will also give descriptions of new iron and steel plants and changes in the equipment of iron and steel works in the past two years.

THE IRON AGE

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The Tribute to Chairman Gary.

The real influence of the "Gary dinners" upon the iron trade is better understood in the light of the event of October 15, when Judge Gary received honor such as probably no man has ever received at the hands of competitors in business. The co-operative movement was much undervalued when it was looked upon as an attempt of powerful manufacturing interests to maintain prices at or near a certain level, and to adjust the supply of iron and steel to a much shrunken consumption. Both prices and production were involved, but they were less a subject of direct concern than the larger matter of mutual confidence in the face of a common peril. As is well known, the effort at "price maintenance," which was all that some onlookers seemed to see in the movement, came to an end. If pegging a product at a price and using every means within the law to hold it there were all that Chairman Gary aimed at, his hospitable persuasions went in vain. But his friends in competing companies saw far more than that in his work. Their tribute told in plain words of inestimable benefits he had conferred upon the iron industry.

On the question when prices should be reduced under halting and weakened demand, and by how much, there would be found no unanimity among representatives of the 55 companies which united in the Gary testimonial. Many of them might still take issue with Judge Gary on some details of the policy he has advocated. The old laws are not done away with. That there will be fluctuations in commodity prices corresponding measurably with the changing tides of demand there is no reason to doubt, and the iron trade, if it is still to be known as a barometer, must reflect these changes. But it is hard to believe that savage, annihilating competition of the old sort will come again, partly because of the light that has been thrown upon the problem by the schooling of the past two years; more, perhaps, because of the evolution in the business that has made 55 concerns, whose heads are on a friendly footing with the officers of the United States Steel Corporation, so influential in preserving peace.

The intimations in articles preceding the gathering of October 15, that it would mark the renewal in a definite way of the former concert of action among the steel companies, are disposed of by the record of what was said and done. At the same time the greatness of the testimonial makes it more than a personal tribute, remarkable as it was from that standpoint. With all allowance for the happier trade auspices of this gathering, the

confessions of faith there made in the Gary idea that "actual friendship may be continuously applied to competitive business" must be taken as more than the courtesies of a notable social occasion. Joined to Judge Gary's interpretation of certain experiences of the past two years, known more intimately to him than to any other man, they plainly indicate this at least—that the permanent results of this unprecedented co-operative movement will be more than have yet been estimated.

It may be suggested that some of the sentiments expressed last Friday night, as far as they relate to business policy, as distinct from appreciation of what one man in a high position has done, are not consistent with certain things done in the sharp competitions of six months ago. Judge Gary himself made an apt comment on such a view in saying to his fellow manufacturers: "You believe in competition, but not hostility; in rivalry, but not antagonism; in progress and success for all, but not in the punishment or the destruction of any." Perhaps that is as good a statement as can be made of the basis on which American steel manufacturers have been operating since the days of pools and associations.

Watching for Wasteful Costs.

Less attention is likely to be paid to costs of manufacturing when business is good than when it is poor. But it is nevertheless true that constant watchfulness in this department of management is the price of increased profits. Earnings may be satisfactory, but to make them greater is worth striving for, especially if this desirable end can be reached without demanding of the customer a higher price or reducing the excellence of the product. Probably most manufacturers will stoutly maintain that their cost systems work as thoroughly in good times as in bad, but it is recognized by experts that there is a difference. Details which are looked after with greatest care when it is necessary to pare down expenses are passed over in the exigencies of manufacturing when a plant is running under pressure. In many instances some extravagance of production is imperative during a rush of business. But there are more cases where extravagance is entirely unnecessary. The view has been taken that a cost system well established will work automatically to give the various items of production. But the information should be used. Comparisons should be continuous. That the cards contain the cost of each operation on each part of each of a lot of machines going through the works is of small immediate value if the records are not watched from day to day to guard against the creeping in of needless expense. It should not be so much a question of what has been done as of what can be done. Where the condition of the labor market compels the employment of men below the standard of skill, cost cards reveal the resultant loss and such labor leaks are worth knowing instantly.

The matter of general expense should be brought under careful scrutiny. Cost totals should be made at frequent intervals, and the varying ratio of overhead to labor ascertained. There is no element of manufacturing more important than this, and none which fluctuates so sharply. During dull times the percentage of overhead to labor may be several times that which prevails when works are running full. In most cases where good cost systems are in operation the subject is given a great deal of careful study. On the other hand there is the extreme of practice, which reckons costs by judgment rather than by figures.

Manufacturers have their individual ideas of how to

put into use their knowledge of this factor of overhead expense. The item may destroy all profits when business is dull, even though the market price of goods be maintained. It shrinks tremendously in its relations to other costs when the plant is running full. In either case the manufacturer should know it. It may or may not figure in the changing of price-lists. It is very important as counteracting additional costs in labor and materials. To presume a case, a plant running under the pressure of a bountiful demand is employing 125 men at an average hourly wage of 22 cents and working 65 hours a week, making a payroll of \$1787, while the overhead expense is \$750. Overhead is 42 per cent. of labor. The market falls off slightly and the force is reduced to 100 at 60 hours, and the average wage to 20 cents, overtime being done away with, making the payroll \$1200. The overhead falls to \$600, and the percentage increases to 50. Still further reduction of demand brings the working force to 50 men at an average wage of 18 cents and a weekly schedule of 55 hours. The overhead goes to \$500. Its percentage to labor cost rises to 100. Finally, in the depths of business depression, 25 men at 15 cents an hour work 40 hours weekly, a payroll of \$150, against an overhead of \$300. The percentage reaches 200, as against 42 when business was at its best.

With a product selling at reduced prices, or, at best, no higher prices, the influence of so vital a change in a single element of costs may readily be understood. The figures used are merely for illustration, but the case as presumed is by no means an exaggerated one, as many manufacturers have learned in their experiences of the last five years. Such striking fluctuations as those noted may be felt within narrow limits of time. Consequently the keenest watchfulness is worth while when market conditions are undergoing radical changes.

Labor Conditions in Country Towns.

In small places, somewhat remote from great centers of population, manufacturers in metal lines are finding comparatively little trouble in securing a sufficiency of good labor. In the older parts of the country, notably New England and New York, there are manufacturing communities which seem at first thought to have no reason for existing as such. They were established usually because of the presence of water power, the capacity of which they outgrew years ago. Some of them have thrived, and have even been given a sharply renewed impetus of prosperity in the last decade. They contain very few industries. Their location is in many cases in the midst of a farming country, which is in an important degree a reason for their present easy labor market.

In one such town there are several establishments manufacturing machine tools, one very large and another by no means small. In common with the rest of the industry they had been very dull until a few months ago. Their working forces had been cut down to the minimum for at least a year, and the usual measure of shop disorganization had resulted. But the men have returned in much greater numbers than in most of the shops. Some have been attracted by the high wages offered by the automobile industry and some have drifted to other employment, but the majority are back at work in their old places. The reasons for this are, first, that in these villages many married workmen own their homes, or, if they rent, prefer not to take the chance of removal to other localities; and, second, that a large number of the younger men come from farms and return to them when there is no longer employment in the shop. The farm

bred labor is good to get, the manufacturers state. While the boys have had no experience in mechanical pursuits, except in the small way resulting from the incidents of farm life, they are intelligent and adaptable to their new conditions. As apprentices they are steady and ambitious. In works where there is no apprentice system they are trained for special task, but their native progressiveness does not permit them to confine themselves to a narrow sphere of knowledge and they finally develop into capable mechanics.

The wonder frequently expressed that industries can be conducted successfully in places where freights are comparatively high and conditions generally are different from those of the usual manufacturing community is in many instances based on a lack of knowledge of the compensating advantages. Not only is the supply of labor more dependable, but the current wage price is usually lower. The mechanic can afford to work for less than in the city. The cost of his living is less. It is not that any one thing in the way of necessities of life except rent, is less expensive, but he normally buys less. The temptation to spend money foolishly is not so strong as in the city. His family is better off in many ways in their home environment. Experience has shown that a man can live better on a given amount of wages in the country village than in the large town, and still better as compared with the city. When it is necessary for the country manufacturer to go to the city for labor, offering the same money that a man is getting, or even less, it frequently happens that the opportunity looks to the workman like an increase, because of the new conditions which he knows will surround him and his dependents. Probably the difference in price of labor in favor of the manufacturer compensates for the difference in other costs which are against him. At the present time he is receiving the very important compensation of working forces organized to a higher degree of relative efficiency than is the case with some of his competitors in the larger towns.

Is Railroad Equipment Deficient?

Any one who traveled across the country by rail during 1908 or the first half of 1909 could not fail to be impressed by the enormous number of idle freight cars which filled sidings and storage yards. The statistics compiled by the American Railway Association, showing from month to month the number of surplus or idle freight cars, reduced the matter to cold figures, but these figures failed to convey a clear view of the amount of capital tied up in this equipment which brought no returns to the railroads. When business is active the private sidings of carload shipping industries hold a large number of the cars in service, for loading or unloading, and other large numbers are lost to view while they go through switching movements in large cities. When all the cars came home in 1908 many of the leading roads were embarrassed to find track room for the storage of their idle equipment.

Now that the pendulum has swung to the other extreme of business activity, 5000 miles of idle cars have disappeared, and complaints from shippers are multiplying that they cannot get enough equipment to carry on their operations. Only a short time ago the surplus cars would have made a solid train twice across the continent, but in a few months more legislatures will have under consideration thousands of bills demanding reciprocal demurrage and other measures to obtain better service from the commercial highways of the country. The ex-

ecutive officials of the railroads have no easy task to please their stockholders and the public at the same time.

The law presumes, and the charters of most of the corporations explicitly provide, that a railroad shall have sufficient equipment to take care of the traffic tendered it by the people who depend upon it for service. A clearly established case of continued negligence in performing its duty as a common carrier, by failure to provide adequate equipment, would justify a legal forfeiture of the charter of any railroad. But who shall say when the equipment of a railroad is adequate? A mere temporary shortage of cars, or inability of a carrier to move all the business tendered, would not be considered seriously by any court or by reasonable business men. If, however, the roads are unable for a period of several months to handle promptly the business offered them, it would seem as though the question of the adequacy of their equipment would be a matter for consideration.

Statistics of railroads for 1907, compiled by the Interstate Commerce Commission, present a curious angle of this question. It appears that the stocks and funded debts of all the railroads in the United States amounted to \$16,082,146,683, and their total assets, as shown by a general balance sheet compiled by the commission, amounted to \$18,885,095,975. The cost of equipment figures in this general balance sheet at \$958,809,305. If these figures are correct, the investment in equipment represents less than 6 per cent. of the total of stocks and bonds, or a little more than 5 per cent. of the total of balance sheet assets.

The "cost of equipment," as shown in this statement compiled by the Interstate Commerce Commission, is intended to cover every class of equipment, including locomotives and cars for freight, passenger, mail, express and construction service. The "cost of road" is shown separately, amounting to \$12,071,535,023, making the investment in equipment a little less than 8 per cent. of the cost of road. The railroads have about 2,000,000 freight cars, and at the lowest ebb of traffic in 1908 the surplus reported by the American Railway Association amounted to a little over 25 per cent. of the total. These were naturally the oldest and smallest cars in service, so that the idle cars may not have represented 25 per cent. of total carrying capacity, but making this allowance, and an additional 5 per cent. for bad order cars in excess of the usual number, it would seem that at the worst period the carriers were utilizing 70 per cent. of their freight capacity.

Opinions may differ as to whether the railroads should provide a larger margin of capacity to take care of periods of active business. The steel industry, in its darkest hour, fell below 40 per cent. of its normal capacity, and even then new construction was under way. In many other industries there is a dull season, even in normal years, when production may drop to 50 per cent. or less of the output at the active season. Statistics of the use of freight cars have not been published long enough to show how much of the surplus reported in the spring of 1908 and again in 1909 may have been due to the normal recession of traffic in the spring and early summer, when the movement of grain is light and the coal traffic has dropped to the minimum. The statistical surplus fell to nominal proportions in the fall of 1908, although industrial activity had not then recovered its full volume, and this year a shortage of cars has already been reported from all parts of the country, in advance of the heaviest movement of traffic. If equipment only represents 6 per cent. of the capitalization of the rail-

roads, it might be to their interest in promoting their revenues if they could carry a larger margin over their minimum requirements.

CORRESPONDENCE.

A Tribute to Kenneth Robertson.

To the Editor: The death of Kenneth Robertson, announced in *The Iron Age* of October 7, will be heard of with great regret by his friends among blast furnace managers, especially by those of us who are the "old" managers of to-day. Solidly grounded in the sciences at the root of the art by his course at the School of Mines he had acquired, from an unusually varied and extensive experience in management, a remarkable degree of practical skill, so that there were few among his contemporaries so well able to meet difficult technical conditions and bring about success under them.

Mr. Robertson published but few papers, but among them, while chemist at the Boonton (N. J.) Works, he contributed to the American Institute of Mining Engineers a valuable one on blast furnace cluders, especially on the effect of magnesia on them, a subject very little understood at that time and concerning which, in fact, altogether erroneous views were inculcated, at least in English text books. Other contributions, mostly discussions on the papers of others, were always valuable and to the point. He was well read, especially in French literature, and this, with a wide experience and a keen and delicate appreciation of wit and humor, made him a most agreeable companion socially.

F.

Adirondack Ore Deposit History.

To the Editor: Referring to the interesting article in *The Iron Age* of October 14 on "The Adirondack Ore Deposit," you may deem it worth knowing that the gentleman who was the principal owner of these lands, and prominent in their early exploitation, was the Hon. Archibald McIntyre. A native of Scotland, he came to this country with his father at the close of the Revolution, when a child, settling at Perth, N. Y., then in Montgomery County. He represented that county in the Assembly from 1798 to 1804, inclusive, except for the year 1803, and served the longest term as Comptroller of this State, from March, 1803, to February, 1821. He was also a State Senator from the Albany, or western, District in 1822. He purchased most of these lands, in Essex County, about the source of the Hudson River, prior to 1840, and was the principal owner thereof at the time of his death at Albany in 1858. David Henderson, his enthusiastic collaborer, was his son-in-law.

Very sincerely,

DAVID A. THOMPSON.

ALBANY, N. Y., October 18, 1909.

The United States Brake Shoe Company.—This company, with large plants in Walton, N. Y., and Pittsburgh, and a small works at Corry, Pa., has placed a contract with C. R. Rogers & Co., Inc., Corry, Pa., for a large modern plant to be erected at Corry, to cost between \$45,000 and \$60,000. Plans have been made and bids will be asked on a main foundry building of concrete and steel construction, 80 x 200 ft., to be equipped with two 20 or 25 ton cupolas, a 10-ton electric traveling crane, grinding machinery, &c.; a concrete and steel power house, 30 x 45 ft., with gas engine, electric motors, &c., and an office building. The United States Brake Shoe Company has secured about 4 acres of land at the junction of the Pennsylvania and Erie railroads, and expects to be making brake shoes for steam and electric service about January 1.

The Detroit Trust Company, Detroit, Mich., offers for sale the property of the defunct Chelsea Stove & Mfg. Company, successor to the Glazier Stove Company, Chelsea, Mich. The buildings on this property are extensive, substantial and well appointed and are of a character to meet the requirements of a manufacturing company seeking a bargain of this character.

The Marking of Imported Small Articles.

In a comprehensive ruling the Treasury Department has construed the terms of section 7 of the new tariff act of August 5, 1909, requiring imported goods capable of being marked, &c., without injury, so as to show the country of origin or the manufacturer. The ruling has been made with special reference to the marking of articles of metal, small steel enamel ware, &c., which, while easily susceptible of being labeled and even capable of being permanently marked without injury if subjected to a separate process, could be so marked only at a cost greatly disproportionate to the original cost of such articles. The ruling is in part as follows:

The articles required to be marked, stamped, branded or labeled by the provisions of section 7 of the act of August 5, 1909, are specifically limited to such as can be so marked without injury. The department is of the opinion that the various methods of marking referred to in said section are prescribed with reference to the customs of commerce in such regard, and that articles such as are customarily stamped or branded, like paper, pens, crockery, &c., and similar articles capable of being so marked without injury, should be so stamped or branded while articles such as are customarily labeled, like liquors in bottles, canned fruits, &c., should be so labeled.

The words "capable of being marked" should not be construed as if reading "possible to be marked." The marking of many articles which it is possible to mark without injury would be at a cost so disproportionate to their market value as to practically prohibit their importation. Such is not the intention of the statute, and only such articles as are readily susceptible of marking in one of the ways provided for should be required to be so marked. Neither should the words "without injury" be construed as referring solely to actual damage to the structure of the article itself. Many articles intended primarily for ornamental purposes, such as lamp shades, statuary, vases, jewelry, &c., might be marked in a conspicuous place without injury to their structure, but such marking would constitute such a defacement as to materially depreciate the value of the article, and, in many instances, render the same unsalable. If, therefore, the market value of an article would be materially decreased by its being marked in a conspicuous place, regardless of the character of such marks, the same should be considered as not capable of being marked without injury.

Surgical instruments should not be required to be marked, for the reason that the indenture caused thereby would be likely to retain septic matter when the instruments are used, and such marking would, therefore, be an injury to the article.

Bottle caps and empty cans, bottles, &c., intended to be used as containers of articles of domestic manufacture, should not be required to be marked with the name of the country of origin, for the reason that the same could not be used, as the marking thereon would be taken as representing that the articles contained therein were of foreign manufacture, and such marking would, therefore, be an injury thereto within the meaning of the law.

The question of whether any article is capable of being marked without injury is a question of fact in each instance to be determined by the collector in accordance with the principles herein stated. Doubtful questions, however, should be referred to the department for determination in order that a uniformity of practice at the various posts may be maintained.

The Austria-American Magnesite Works.

The American Refractories Company, Chicago, announces the completion of its Austria-American Magnesite Works, located at Radenthein, Austria, which has been in course of construction for about one year. The initial firing of the calcining kilns and starting up of the plant took place October 2. It has begun operations with a yearly capacity of 60,000 tons of dead burned magnesite. The company has made arrangements to carry large stocks of this product at the ports of Philadelphia and New Orleans; magnesite will also be brought in through New York. The American Refractories Company will be prepared to make deliveries of dead burned magnesite in this country by December 1.

This announcement is of special interest to the basic open hearth steel industry, since the American Refractories Company, owning its own works, which will be operated under its direct supervision, will be in position to furnish dead burned magnesite of the exact quality and physical condition required by basic open hearth

practice, not only in the United States, but in other countries. Magnesite brick will also be manufactured on a large scale for the trade in this country. Controlling its own supply, the company will be able to provide against shortages of material, which have heretofore been experienced by steel manufacturers who have depended upon more or less uncertain sources of supply. It is the purpose of the company to augment the capacity of the Austrian works as fast as possible up to a yearly output of 120,000 tons in order to keep pace with the rapid growth of the basic open hearth industry.

Error in Bonded Smelting Provision of New Tariff Law.

WASHINGTON, D. C., October 19, 1909.—A serious error in the drafting of Section 24 of the Payne tariff act, which was enacted to take the place of section 29 of the Dingley act providing for the smelting of metals in bond, has been discovered by the Treasury Department. Instead of permitting the smelting in bond of all dutiable metallic ores, the provision is strictly limited to lead, but the exigencies of the situation are such that the Department feels justified in giving the new section a somewhat forced construction to avoid disastrous consequences, especially to the rapidly expanding zinc smelting industry, although it is recognized that this is merely a make-shift and that legislation will have to be procured to correct the error in the new law.

To remedy temporarily the defect in the law, the Department has decided to take the rather extraordinary position that inasmuch as section 29 of the Dingley act provided for the smelting of all metals, its provisions have not been repealed by section 24 of the Payne act except so far as they relate to lead. When the bonded smelting section of the new tariff law was drafted, the experts of the Senate Finance Committee who framed it were in conference with the representatives of the lead smelting industry, and through inadvertence the word "lead" was substituted for "metals," thus excluding all metals other than lead from the bonded smelting privilege.

While this decision of the Department will afford a large measure of relief to the zinc industry, it will not place zinc smelters on an absolute equality with smelters of lead, for the reason that the new tariff law provides certain advantages not granted by the Dingley act. One of the most important of these changes permits smelters of lead to cancel the bonds given for the payment of duties on the metallic contents of their imported ores upon the transfer the metal derived therefrom to a customs bonded warehouse. Under the Dingley act bonds could be canceled only upon the actual exportation of the smelted metal. The new law facilitates the use of lead smelted in bond in the manufacture of products intended for export, as it permits lead produced in bond and subsequently transferred to a customs warehouse to be withdrawn for consumption in the manufacture of articles for export with benefit of drawback of 99 per cent. of the duties paid on the ores. This provision gives the lead smelters an advantage of 9 per cent. in the amount of drawback paid, as the Department has always limited to 90 per cent. the drawback allowed on metals smelted in bond and withdrawn from consumption under section 29 of the Dingley act, contending that the vastage allowance of 10 per cent. for smelting and refining must be taken into account when liquidating drawbacks on goods manufactured for export from metals produced in bond.

W. L. C.

The first of the new steamers now being built by the American Shipbuilding Company for the Pittsburgh Steamship Company will be launched October 23 at Lorain and christened William B. Schiller. Mr. Schiller is president of the National Tube Company, with offices in Pittsburgh. The second will be ready for launching about November 15 and will be named John P. Morgan, Jr. Mr. Morgan is a member of the Finance Committee of the United States Steel Corporation.

Rust-Preventing Paints for Metal Structures.*

BY EM. CAMERMAN, BRUSSELS, BELGIUM.

A report presented to the Zürich Congress by Mr. Valat, Ingénieur en chef à la Compagnie de l'Est français, and my own experiments on several paints which had recently been advertised, tend to show that poor results are obtained with the following rust preventing paints:

Paints prepared with a mixture of linseed oil and of essence of turpentine.

Paints prepared with tar or its derivatives.

Zinc white paints (enamels).

Paints containing sulphate of barium.

Paints in which manganese resinate forms the siccativ.

Zinc sulphide paints.

Lithopone colors (mixtures of zinc sulphide and barium sulphate).

A pure linseed oil paint which developed blisters.

Difficulties with Preservative Coatings.

These poor results will be understood when we consider the difficulties with rust preventing coatings. I will enumerate these:

1. The coating may be wanting in thickness from the very moment of its application or, at least, after having dried. It will be conceded that, other things being equal, a thin coating will not resist so long the incessant bombardment by the particles of atmospheric dust and will not remain so impervious as a thick coating. Thus, a paint containing 50 per cent. of essence of turpentine is very fluid. It spreads to a much finer film than a paint prepared with boiled linseed oil, which forms a relatively viscous product. The former coating, moreover, is further reduced in thickness by the volatilization of the whole of its essence of turpentine, which constitutes half of its volume. The great influence of mixtures which contain volatile constituents is evident. Almost all the tar paints, which generally consist of some pitchy, more or less dry, material dissolved in an essential oil, may be classed with this series of defective paints. The essential oil is to evaporate and the paint to dry in this way, which will necessarily leave the final coating much weakened.

2. The coating may gradually diminish in thickness. In addition to their solvents the tar paints themselves slowly and gradually give off their volatile constituents. There result hollow spaces, shrinkages and, consequently, thin, weak spots and even fissures.

3. The coating, although satisfying the conditions as to thickness, may be wanting in elasticity. It is thus again with preparations of dry pitch and essential oils. The dried linseed oil, on the contrary, forms a soft, elastic pellicle, which has often been compared to leather.

4. The coating may lack hardness and not be able to resist the impact of the dust particles; that is to say, it may not wear well. The two qualities, elasticity and hardness, may at first thought appear contradictory. But they are quite compatible if we mingle a powder of hard grains with a paste of a soft and elastic material. This consideration quite justifies the addition of powders or pigments to the bodies. We need not restrict ourselves to pure linseed oil, for instance.

5. The coating may develop cracks and breaks in the continuity of the surface. Such accidents may be ascribed to two chief causes.

- (a) The powdered material mixed with the body of the paint does not sufficiently adhere to the latter and separates from it under the inevitable contractions and dilatations. This will be the case of certain inert materials—sulphate of barium, sand in mixtures with ochre, and others.

- (b) The body may be decomposed. This occurrence is almost always due to polymerization or depolymeriza-

tion processes. Owing to the latter reaction certain oils give rise to the formation of simple hydrocarbons, which act as solvents for the remaining substances. The color then turns pitchy; the simple hydrocarbons are slowly volatilized, and hollow spaces and cracks make their appearance.

6. The powdered substance must be intimately united with the liquid mass of the body. Chemical combination between the components forms the most perfect bond, which will best resist any tendency to disintegration under the influence of dilatations and contractions. The lead oxides may be cited as a noteworthy example.

7. Neither the body nor the powdered substance should be liable to atmospheric corrosion by the oxygen and particularly by the furnace gases from large industrial works. Zinc preparations, zinc oxide, zinc sulphide and the lithopones in particular leave much to be desired in this respect.

Linseed Oil.

Of all the liquids which serve as paint body, linseed oil appears to us to be the best. It spreads in relatively thick films. Instead of diminishing in thickness by volatilization, it gains in mass by absorption of oxygen and it is scarcely liable to deperdition. Judiciously applied it never turns pitchy, nor is it inclined to crack. It keeps sufficiently elastic, moreover, for years. Linseed oil can be obtained in different grades; as crude linseed oil, old linseed oil, as linseed oil merely boiled in air, as standolie de Hollande, as thickened linseed oil boiled with litharge or with manganese peroxide.

The crude linseed oil, when well clarified, is relatively light in color and readily taken up. It is, however, a little more fluid than the boiled oil and spreads in slightly thinner films. During its oxidation it loses from 6 to 8 per cent. of the decomposition products of glycerine; for this reason it forms blisters when applied in the hot or especially as long as hot. The old stored linseed oil is very clear, loses little by oxidation, dries pretty rapidly and is superior to the just described raw oil. But it rarely comes on the market. Linseed oil simply air bottled (kettle boiled) differs little from the two grades mentioned and need not further be dwelt upon. The oil which is designated standolie de Hollande is a clear oil of considerable thickness, but it dries very badly and can only be used as an additive in the proportion of 20 or 30 per cent.

Linseed oil boiled with litharge or manganese peroxide is a comparatively thick fluid which does not diminish in mass while drying, does not throw up blisters, and requires only a very small quantity of artificial siccativ; but it is of a very dark color. We recommend this last mentioned grade for all rust preventing paints, when the shade of color is not of importance and when the quality of the oil can be controlled. The oil must be absolutely free from manganese resinate, because this product is subject to depolymerization and is apt to turn pitchy and to crack.

Pigments.

We will now pass to the diverse powders or pigments which are mixed with the linseed oil. My own experiments have demonstrated that lead white mixed with inert powders, such as sulphate of barium, in the proportions of 25, 50 or 75 per cent. of barium sulphate, possess a rust preventing capacity almost directly proportional to the percentage of lead white. In other words, in panels of iron painted under the same conditions and examined at certain intervals, spots made their appearance whose intensity was approximately proportional to the percentage of the barium sulphate present in the paint.

Lead white paints, paints containing iron oxide (iron minium), minium (lead oxides) or graphite have resisted best. Zinc oxide is far inferior to these pigments; zinc sulphide and lithopone (mixtures of zinc sulphide and barium sulphate) are worthless.

Conclusions.

In my opinion, in the actual state of our knowledge, we should impose the following conditions concerning paints which are to protect iron structures from rust:

The paint should consist of iron minium prepared

* A paper read at the Copenhagen Congress of the International Society for Testing Materials, September 7-11, 1909. The writer is in charge of the testing department of the Belgian State railroads.

October 21, 1909

THE IRON AGE

1251

with boiled linseed oil under exclusion of essence of turpentine.

The determination of the amount of siccative to be used may be left to the superintendent in charge.

So far as my own experience goes, equally good results are realized when graphite is substituted for the iron minium. The graphite must also be reduced to an impalpable powder and should contain at least 55 per cent. of carbon. The quantity of powdered pigment which should be mixed with the linseed oil may be left to the judgment of the painters.

The minium of iron shall be ground to an impalpable powder; a model of an apparatus for this purpose will be produced. The fineness will, in any case, be sufficient when the powder, stirred with water and applied to a glass plate as a fluid paste, does not allow any grains to be felt when rubbed with the finger. The minium should contain at least 75 per cent. of ferric oxide and be free from sulphur. The boiled linseed oil should be obtained from a clear, pure oil, boiled with litharge or manganese peroxide until its specific gravity attains at least the figure 0.930. As regards the siccative, the superintendent should make a trial three or four days before the commencement of the work, by painting a panel with the prescribed composition, but without using a siccative. The proportions will have to be adapted to the suitable period of drying. That period will depend upon the temperature, the necessity of keeping off the dust, which may be troublesome at the time; the urgency of applying the second coating, and other features. It should be borne in mind that paints which contain the minimum amount of siccative are the best.

The Prevention of Rust in Reinforcement for Concrete.

The following article, which contains a number of instructive points, is a chapter taken from a book entitled "Dragon Portland Cement," issued by the Lawrence Portland Cement Company, whose works are at Siegfried, Northampton County, Pa., and sales offices at 1 Broadway, New York, and in the Harrison Building, Philadelphia:

Two theories exist with regard to the action which takes place when iron or steel corrodes. One is that this action is electrolytic in nature, while the other considers that the reaction is purely chemical. In either case moisture is essential, while with regard to the purely chemical theory an excess of oxygen or other oxidizing agent is required.

Pure cement, with its slight alkaline reaction, when applied in a continuous coating over the surface of a steel or iron rod or other shape, has been found to act as a preservative of high order. Paints are actively exploited which contain as the principal ingredient Portland cement either as manufactured for usual purposes or produced synthetically with this particular object in view. In every instance it is obvious that an absolutely continuous film of cement must be applied to the steel surface. In reinforced concrete work this is secured by properly proportioning the concrete mixture so that the cement and water forms a grout which can be worked against the reinforcement rods, and if properly done will coat them in the required manner. With this in view a slight excess of water is required, and it is necessary that in the case of floor slabs, beams and girders the mortar from the concrete be constantly made to flow ahead of the majority of the material being deposited, so as to surround the reinforcement and thoroughly coat it. This action is largely facilitated by a gentle tapping of the reinforcement which produces a slight vibration. This acts so as to keep the larger particles of the concrete pushed away from the surface of the reinforcement, the space between being filled with the mortar, consisting largely of cement.

Some practitioners have required that all reinforcement be dipped in a bath of cement grout before being installed in the forms, but by careful manipulation during the deposit of the concrete this extra handling and cost is unnecessary and can be obviated. Where special care

has not been taken, however, reinforcing rods have been uncovered after a few years and found nothing but a streak of rust.

In the case of cement work which is applied under the trowel, such as stucco, &c., or where the reinforcement is in such a shape that it cannot be manipulated so as to secure the complete coating of its surface with grout, it becomes necessary because of the perviousness of such stucco or concrete to the action of air and water, to supply other methods of preventing the rusting of the reinforcement. Where heavy steel beams are used as grillages, for instance, or in the floor systems of composite bridges, subways, &c., it is very essential that rust be prevented and that stray electric currents are not allowed to attack the metal structure. Various coatings have been devised, some of which are claimed to be of high resisting power against moisture and electricity, and many experiments have been performed to discover their real virtues. A high grade of asphalt or coal tar pitch, when uniformly applied to a thoroughly cleaned structure which is not so cold that the pitch hardens so rapidly as to become brittle, has been found particularly effective.

In the case of stucco greater trouble has been experienced, and many instances are known in which large areas have become separated from the original structure because of complete corrosion of the metal reinforcement, resulting in much unsightliness and some absolute danger. Here, again, special coatings for the metal work have been employed. Proprietary compounds, to be added to the cement in a dry state or to the cement mortar in the form of a liquid, are also widely advertised. They are supposed to make the stucco waterproof and hence prevent the possibility of rust in the metal work on which the stucco is placed. Finally, exterior coatings over the surface of the finished work are often applied. Doubtless the most perfect of these is wax, which is driven into the cement work under heat and remains as a perfect preventive of any action by moisture, acid or alkali so long as the stucco does not crack and allow entrance of some destructive agent through capillary action. Were it possible to use the pure cement directly against and completely covering the wire lath or other metal work on which the stucco is placed the necessity of these other devices above mentioned would be obviated, but a stucco mixed rich enough to produce this effect would be too costly under ordinary circumstances, and resort can better be made to other methods for economic reasons.

In general, the preventing of rust on steel imbedded in cement mortar and concrete can be obviated where dense masses are produced and where the metal work can be completely coated with a rich cement mixture. Where this condition has been found to exist reinforcement has been known to remain in a condition as perfect as when it left the rolling mills, even after severe exposure of the concrete work to destructive agencies for long periods extending over as many as 15 or 20 years.

A Mackintosh, Hemphill & Co. Volume.—Both as an index of the remarkable development of late years in rolling mills and their equipment, and as an example of the most artistic type of industrial book-making, a late publication of Mackintosh, Hemphill & Co., Pittsburgh, is conspicuous. It contains more than 100 10 x 12 in. pages of text and illustrations, chiefly the latter, and deals with the heaviest rolling mills and their machinery, including blowing engines and engines for driving mills of all classes. An interesting story is told of the building up of the business. While the firm has been the owner of the Fort Pitt Foundry since 1878, the foundry itself dates back to the early years of the last century. The guns for Perry's fleet on Lake Erie in the war of 1812 were cast there. The firm of Mackintosh, Hemphill & Co. was organized in 1858, so that the present volume serves as a semicentennial souvenir. The views given of installations of blooming and slabbing mills and structural, plate, sheet and merchant mills, and of the exceptionally heavy engines built for some of them, have not been excelled in this class of illustration. This statement applies also to the views of miscellaneous rolling mill machinery.

The Allis-Chalmers Company.

The eighth annual report of the Allis-Chalmers Company, giving the result of operations in the fiscal year ending June 30, 1909, shows a net profit for the year of \$135,432, which was a decrease of \$480,383 on the profit of the previous year. An allowance of \$668,218 was made for maintenance, repairs and renewals, and \$284,777 for depreciation. The condensed income account for the two years is as follows:

	1909.	1908.
Profit on operation.....	\$1,809,009	\$2,573,961
Maintenance, depreciation, interest, &c.	1,673,577	1,058,147
Net profit for year.....	\$135,432	\$615,814
Previous profit and loss surplus.....	385,997	*229,817
Surplus.....	\$521,429	\$385,997

* Deficit.

The statement of current assets and liabilities shows a gain in working capital of \$1,008,008. In the last quarter of the fiscal year first mortgage bonds of the par value of \$828,000 were sold to reimburse the treasury on account of capital expenditures at West Allis and other works. The general balance sheet as of June 30, 1909, compares with the previous year as follows:

Assets.		1909.	1908.
Discount and commission on bonds....		\$2,683,189	\$2,564,515
Real estate, &c.....		37,548,053	37,496,887
Bills and accounts receivable.....		4,721,052	4,922,235
Merchandise, material, &c.....		5,580,447	6,220,513
Cash.....		2,299,017	1,949,129
Development, patent account.....		1,318,092	1,341,092
Investments.....		260,000	255,000
Totals.....		\$54,409,850	\$54,749,371
Liabilities.		1909.	1908.
Preferred stock.....		\$16,150,000	\$16,150,000
Common stock.....		19,820,000	19,820,000
Accounts payable.....		1,206,501	1,809,396
Mortgage bonds.....		11,148,000	10,325,000
Notes payable.....		2,400,000	3,574,848
Depreciation reserve.....		1,714,845	1,313,429
Accrued bond interest.....		278,375	.....
Bullock Elect. Company stock.....		1,170,700	1,170,700
Surplus.....		521,429	385,997
Totals.....		\$54,409,850	\$54,749,371

President W. H. Whiteside makes the following accompanying statement:

"During the past year the company suffered with other industrial corporations from a business depression which, existing with fluctuating severity for three-quarters of the preceding year, continued with little change throughout the first half of the fiscal year ended June 30, 1909. This condition was reflected in the volume of the company's sales, which compelled the works to be operated during the year at about 50 per cent. of their normal capacity, and although improved methods decreased the cost of production, yet the fixed charges (interest, taxes, insurance, depreciation, &c.) necessarily continued nearly constant and prevented the company from showing for the year larger net earnings.

"New business booked commenced to show substantial gains in January last, and for the last half of the year averaged per month nearly 65 per cent. more than the monthly average for the first half. This increase with advancing prices has continued to the present time.

"Liberal sums have been appropriated out of earnings for maintenance and betterments of the several works of the company, with careful provision against fire risks. All expenditures for the development and patent protection of the newer lines of machinery, which formerly were carried forward as deferred charges, have been deducted this year from earnings. An unusually large number of important patents covering inventions of our engineers were granted to the company during the year.

"In September the total amount of business booked exceeded every month but one since the organization of the company, and for the present month (October) there is an equally favorable prospect."

The W. H. Mullins Company, Salem, Ohio, has placed an order with the Roberts Motor Company, Sandusky, Ohio, for 1550 gasoline engines for power boats.

The Thirtieth Anniversary of Basic Bessemer Steel in Germany.

On September 22, the thirtieth anniversary of the first blows of basic Bessemer steel made in Germany, *Stahl und Eisen* has published some notes on the early history of that epoch-making invention by some of the men still living, who were identified with its early days. One of them is Josef Massenez, then associated with the Hoerde Works, who, when he received the newspaper accounts of Thomas's experiments at Middlesbrough, under the guidance of E. Windsor Richards, sent Richard Pink and Eduard Meier to England. They met there Gustav Pastor and Dr. Grass of the Rheinische Stahlwerke and on April 26, 1870, the purchase of the German patents by the two companies was concluded. On September 22 of the same year Hoerde made its first blow in a three-ton basic converter, and curiously, though without previous arrangement, the Rheinische Works started on the same day. Massenez describes in detail the troubles which the pioneers had, with the selection of the proper iron, with basic linings and with the acceptance of the basic steel. Another pioneer, Gustav Hilgenstock, who reviews developments chiefly from the standpoint of the furnace manager, deals with the introduction of converting direct metal and of the mixer. August Spannagel, formerly of the Phoenix Company, touches upon the adoption of the Giers soaking pit, the Darby carbonizing method and the preparation of the linings.

The editor adds some very interesting data as representing development in practice, with special reference to the work done at the Thyssen plant, the Gewerkschaft Deutscher Kaiser at Hamborn. It started July 20, 1897, with four 15-ton converters; a mixer was not installed until the end of 1899. In the last six months of the year 1897 the plant made as follows: In August, 15.2 blows; in September, 17.6 blows; in October, 18.3 blows; in November, 18.4 blows, and in December, 18.7 blows per shift. In the next 10 years, inclusive of 1907, the number of heats per annum rose from 13,381 in 1898 to 38,485 in 1907. It is true, however, that since February 8, 1904, the steel plant was enlarged by a fifth 15-ton converter. The best record up to the end of 1903 with four converters was 2691 blows in one month of 54 shifts, an average of 49.8 blows. In 1907 the record went up to 3485 blows in one month of 54 shifts, an average of 64.5 blows per shift. In single shifts of 12 hr. a maximum of 73 blows has been attained. During 1898 the average life of the linings was 198.3 charges. It has risen to 269.5 charges in 1906 and averaged 255.7 charges in 1908. On an average one lining lasts as long as five bottoms, of which as a rule three are rammed and two are tuyere bottoms. In single instances a life of 58 blows has been attained with a rammed bottom, and 130 blows with a tuyere bottom. The record on converter linings is 330 blows.

From September 22, 1879, to the end of 1908, there were produced in Germany and Luxemburg 84,183,220 metric tons of basic Bessemer steel. The output was 7,212,454 tons of basic Bessemer steel and 4,039,940 tons of basic open hearth steel in 1907. In 1908 it had dropped back to 6,510,754 tons and 3,854,155 tons, respectively.

At the New York November meeting of the American Society of Mechanical Engineers, to be held on the evening of the 9th in the Engineering Societies Building, 29 West Thirty-ninth street, two papers will be presented. One by Prof. Gaetano Lanza and Lawrence S. Smith of the Massachusetts Institute of Technology, on "Reinforced Concrete Beams," and the other by Prof. Walter Rauterstrach of Columbia University, on "Stresses in Curved Machine Members." The first paper compares the results of tests upon full sized beams made at the Massachusetts Institute of Technology and the University of Illinois, with three different theories of beams of this type. The second paper outlines the method of procedure for the design of principal sections of hooks, punch and shear frames and other curved machine parts.

NEWS OF THE WORKS.

Iron and Steel.

The Vulcan Crucible Steel Company, Alliquippa, Pa., near Pittsburgh, is operating its plant to full capacity on contracts for tool steel from large automobile manufacturers, machinery builders, railroads, &c. Within the last year the company has made various improvements in its plant, so that it is now in the highest state of efficiency to fill orders promptly.

The Buckeye Rolling Mill Company, Newark, Ohio, which recently took over the plant of the Ohio Rail Company at that place for making light rails, has placed an order with the Pittsburgh office of the Babcock & Wilcox Company for 750 hp. B. & W. boilers.

Spang, Chalfant & Co., Inc., Pittsburgh, operating the Etna Iron & Tube Works at Sharpsburg, Pa., have applied to the borough council for the vacation of a portion of a street which runs through its plant. If the request is granted the company proposes to make material extensions and additions to the works, including heating furnaces and other equipment that will cost about \$250,000. A new machine shop will be erected and some heavy machine tools will then be required.

No. 1 Furnace of the Birmingham Coal & Iron Company at Vanderbilt, Ala., has been blown out and No. 2 Furnace at that plant blown in after having been relined.

The plant of the North Alabama Rolling Mill Company at Sheffield, Ala., will be put in operation about November 1.

The American Rolling Mill Company, operating an open hearth steel plant and sheet mills at Middletown, Ohio, and a sheet mill plant at Zanesville, Ohio, recently sold 15,000 shares of its common stock to W. E. Hutton & Co. of Cincinnati for \$200 per share. The money thus obtained will be used in making large improvements and additions, which will probably include the erection of two or three more 60 or 65-ton open hearth furnaces, a blooming mill and a plate mill. The company is compelled to make considerable extensions to take care of the rapidly growing demand for its American Ingot Iron, for which many new uses are coming up.

The new sheet and tin mill plant of the De Forest Sheet & Tin Plate Company, at Niles, Ohio, has started up in full. The plant contains four sheet and two tin mills and a galvanizing department. Splendid time was made in the erection of the mills, and the whole plant is now completed, with the exception of the department for making roofing sheets, which will be started early in November. The company is ready to receive inquiries of the trade for sheets and tin plates and is in position to make reasonably prompt shipments.

George J. Hagan, 401 People's Bank Building, Pittsburgh, has recently received contracts for a coal fire annealing furnace for the Warren Steel & Iron Company, Warren, Ohio, and a large contract for some double annealing furnaces (producer fired), five gas producers, 10 sheet furnaces and 10 pair furnaces (coal fired), and the flue connections between annealing furnaces and gas producers, as well as the bricking in of five Stirling water tube boilers. In the new addition of the McKeesport Tin Plate Company, McKeesport, Pa., which will be completed and ready for operation about January 1.

S. Diescher & Sons, Pittsburgh, engineers for the McKeesport Tin Plate Company, have awarded the following contracts for the addition in course of construction at the company's plant at McKeesport: Lawrence Steel Construction Company, general contractor; Ritter-Conley Mfg. Company, Pittsburgh, structural steel work; Allis-Chalmers Company, electrical machinery; George J. Hagan, People's Bank Building, Pittsburgh, furnaces.

The Standard Engineering Company, Ellwood City, Pa., is building a continuous bar mill for the Clairton Works of the Carnegie Steel Company at Clairton, Pa., and also has the contract for the new tin mills of the Jones & Laughlin Steel Company at Alliquippa, Pa. Work on the latter contract has been under way for some time. The company also has some large contracts for pipe threading machines for shipment to the Pacific Coast. It has put its plant on double turn and is now giving employment to about 300 men.

Union Furnace of Rogers, Brown & Co., at Ironton, Ohio, was blown in last week and will make basic iron. Its capacity is about 150 tons a day.

General Machinery.

The Buffalo Molyneux Company has been incorporated at Buffalo, N. Y., with a capital of \$200,000, and will build and equip a factory for the manufacture of mailing machines and devices for handling mail matter under patents controlled by the Molyneux Mailing Machine Company. The directors are B. S. Molyneux, C. H. Bierbaum and L. Hatch; offices, 1140 Prudential Building.

The Gifford-Wood Company, manufacturer of conveying machinery, Hudson, N. Y., has secured the services of D. C. Newman Collins, consulting engineer, 29 Broadway, New York City, to prepare designs for the construction of a new plant to be erected at Hudson. The buildings will be of fireproof construction and cost about \$100,000.

The Western Motor Works, Marion, Ind., has its buildings

far enough completed to start the toolmaking department. The machinery for the other departments is being rapidly installed.

The Joseph Reid Gas Engine Company, Oil City, Pa., manufacturer of gas engines and oil well appliances, is erecting a concrete and brick building, 80 x 125 ft., one story, for use as a pattern shop and pattern storage department. The pattern shop is now in another section of Oil City, and when the new building is completed the present equipment will be moved to it and placed in operation. The foundry and machine shop are about several hundred feet apart, and to facilitate handling the rough castings between these departments an overhead runway is being erected.

The National Roll & Foundry Company, Pittsburgh, plant at Avonmore, Pa., reports considerable activity in its line of work. It is busy turning out rolls and mill equipment, but is still able to book orders for reasonably prompt delivery. The roll department is filling contracts from different manufacturers in Canada and this country, while the foundry and machine department is busy on three transfer tables and charging machines, an electrically operated roller table for a rod mill and a large hydraulic shear, all for shipment to the Southern Iron & Steel Company, Gadsden, Ala.

The G. M. Diehl Machine Works, Peru, Ind., has been incorporated with \$30,000 capital, to manufacture metal machinery. The directors are G. M. Diehl, August Diehl and Charles Latchene.

The Titusville Forge Company, Titusville, Pa., is building an addition to its machine shop, 60 x 180 ft., the steel work being done by the McClintic-Marshall Construction Company, Pittsburgh. It will be completed in about six weeks and will increase the shop capacity about 25 per cent. Lathes and grinders already ordered are to be installed for automobile work. Other improvements, include two 8000-gal. storage tanks, two additional oil furnaces, some annealing furnaces and two 48-in. saws made by the Newton Machine Tool Works, Philadelphia. These saws will be used for cutting off ingots and billets cold before they are placed in the heating furnaces, thereby eliminating all chances of flaws, piping, segregating, &c., which could not otherwise be detected were they placed in the furnaces in their original state.

The Grupe Drier & Boiler Company, Davenport, Iowa, is preparing to build a machine shop.

Foundries.

The Lumen Bearing Company, Buffalo, N. Y., has commenced the construction of a brick and steel foundry building which is to be added to its plant at Sycamore street and the New York Central Railroad Belt Line.

The Iowa Furnace Company, Des Moines, Iowa, is completing a new plant and the machinery will be installed this month.

A new building, 50 x 175 ft., will be added to the plant of the Albion Malleable Iron Company, Albion, Mich.

The Detroit Valve & Fitting Company, Detroit, Mich., is completing plans for the erection and equipment of a plant at Wyandotte, Mich., for the manufacture of brass, malleable and cast iron fittings. An expenditure of \$50,000 for the building and a like amount for machinery is contemplated.

The Thiry & Kendrick Mfg. Company, Detroit, Mich., will erect a one and two story foundry building, 105 x 200 ft., at 660-664 Franklin street, at a cost of \$20,000.

The Buhi Malleable Company, Detroit, Mich., has let contract for a one-story brick foundry building, 62 x 282 ft., which it will build on Adair street between Wight street and the Detroit River, at a cost of \$18,000.

The Riverview Bronze & Mfg. Company, Buffalo, N. Y., which is erecting a foundry and factory at Gull street and New York Central Railroad Belt Line, for the manufacture of manganese and phosphor bronze, brass and aluminum castings for automobiles and motor boats, will also make a specialty of light aluminum castings for aeroplanes. Patrick F. Woods, 892 Elliott Square Building, is the manager.

The Marion Malleable Iron Works, Marion, Ind., will build a fireproof pattern vault, 50 x 100 ft., having brick walls, concrete roof and windows of metal.

Sweet Brothers, Lestershire, N. Y., have recently made a number of additions to their foundry and have just completed a new storeroom and pattern storehouse with office. These improvements will considerably increase the capacity for the manufacture of gray iron castings.

The Garwood Bros. Company has been incorporated at North Manchester, Ind., with \$25,000 capital stock, to do a foundry business and manufacture machinery. The incorporators are A. R. Garwood, B. V. Garwood and J. A. Garwood.

Sweet Brothers, Iron founders, Lestershire, N. Y., have started an addition to their foundry building, which will be utilized as a pattern shop and drafting room.

The H. E. Mills Mfg. Company, manufacturer of foundry supply specialties, 322-326 New Rosenbloom Building, Syracuse, N. Y., is arranging to erect a new factory in the village of Solvay, a suburb of Syracuse. The new plant will be devoted largely to the manufacture of a dry core compound used by the

foundry trade as a substitute for rosin and flour in making cores. The new factory will be two stories, 200 x 300 ft.

Power Plant Equipment.

The McNeil Boiler Company, Akron, Ohio, manufacturer of Cook water tube boilers, has just completed two new buildings, 50 x 100 ft., and has placed contract for another building, 80 x 150 ft. Contracts have been placed for all the equipment for the completed buildings and for the new building just started. This company's stockholders have recently voted to increase its capital stock from \$100,000 to \$150,000.

The McAllister-Burns Construction Company has succeeded the Oliver Boiler Company at Girard, Ohio, and has organized by electing the following officers: E. H. Lotze, president; John H. Byrnes, vice-president and manager; H. McAllister, treasurer; W. R. Philbbs, secretary; Washington Hyde, assistant treasurer. The new company will make some important improvements and additions to the plant taken over, and its specialty will be heavy steel plate work of all kinds.

Bridges and Buildings.

The Eau Claire Trunk Company, Eau Claire, Wis., has purchased a site upon which it contemplates the erection of a new factory next spring.

Ground has been broken for an \$80,000 building to be erected by the D. J. O'Brien Company, Omaha, Neb., by which it will be occupied as a candy factory. The building, which will be of mill construction, 66 x 132 ft., and will be equipped with suitable machinery and a sprinkling system. It will not be ready for occupancy before March 1.

Fires.

A fire recently occurred at the plant of the Duplex Metals Company, Chester, Pa., but the damage was not extensive.

The Hartford Plow Company, Hartford, Wis., a part of whose plant was recently destroyed by fire, will not rebuild at present, as a number of other buildings are being erected which will take the place of the structures destroyed by fire. These buildings were planned before the blaze, however, and in consequence the structures which were burned will be replaced next spring. The company is now planning on putting in a new power plant of about 300 hp.

The plant of the Gainesville Iron Works, Gainesville, Texas, was damaged \$25,000 by fire October 6.

The drop forge department of the plant of A. A. Kraeuter & Co., Newark, N. J., was damaged \$25,000 by fire October 8.

Hardware.

The manufacturing business of C. P. McDougall & Son, Indianapolis, Ind., whose kitchen cabinet factory at 1421 to 1427 South Meridian street was recently destroyed by fire, will be continued, but plans for reconstruction are not yet fully matured.

The American Safety Lantern Company, Glens Falls, N. Y., will erect a factory building of reinforced concrete. The Gabriel Concrete Reinforcement Company, Detroit, Mich., has the contract for construction.

The Traverse City Refrigerator Company, Traverse City, Mich., has been organized with a capital stock of \$100,000 to manufacture a new line of refrigerators and refrigerating devices embodying principles which it is said have not been heretofore offered to the public. The company plans to erect at once a small reinforced concrete building of sufficient size to enable it to make up a sample line for introduction to the trade. Future plans contemplate its still larger development next year.

The Champion Saw & Machine Works, Beaver Falls, Pa., reorganized some time ago and now operating under new management, reports its business in saws and gas engines to be so good that it is operating its plant to full capacity. It manufactures horizontal gas engines from 5 to 60 hp. A recent shipment made to the Tri-State Gas Company, Porters Falls, W. Va., comprised two 45-hp. engines, while another order calls for two 30-hp., to be shipped to the same concern at Roesby Rock, W. Va. An order for 225 special wobble saws for a Cincinnati manufacturer is being filled, as well as one for 200 of a new type air valve for compressor plants. Within the next few months the Champion Works will overhaul and improve its plant and bring it up to a higher state of efficiency.

The McCray Refrigerator Company, Kendallville, Ind., has by the erection of new buildings and other improvements practically doubled the capacity of its plant. Increased facilities have been supplied for the building of special work, which is no longer subject to inconvenient delay due to crowded capacity, but can be promptly executed. All departments of the plant are fully engaged.

Plans are being drawn for an addition to the shops of the Marshalltown (Iowa) Trowel Company.

P. Moegerle, for many years connected with Hubbard & Co., Pittsburgh, and also with the Champion Saw & Machine Works, Beaver Falls, Pa., has engaged in business on his own account and has completed a new building, 25 x 50 ft., at Beaver Falls, Pa., containing a gas engine and other equipment for the manufacture and repairing of all kinds of saws. Another building, 15 x 20 ft., serves as a tempering and blacksmith shop. The

new enterprise is known as the P. Moegerle Saw Works, Beaver Falls, Pa.

Miscellaneous.

The Department of Public Works, Detroit, Mich., is preparing plans for a sewage pumping station to be located on the Detroit River at the foot of Parkview avenue. The building will be 45 x 175 ft.; the initial equipment will consist of three pumps, one with capacity for 30 and the other two with capacities of 110 cu. ft. per second, the lift being about 27 cu. ft.

A 250-ton concentrating plant and mill will be erected by the Mercantile Mining Company, Webb City, Mo.

Additional machinery will be installed by the Maryland Portland Cement Company, Baltimore, Md., whose plant is located at Security, Md.

Wheeler & Schebler, Indianapolis, Ind., manufacturers of the Schebler carbureters, are building a new factory plant, and as soon as the firm is installed in its new quarters steps will be taken to enlarge the foundry. The improvements being made are designed for a production of 200,000 carbureters for the coming year.

The pumping plant at Dallas, S. D., will be enlarged.

A factory for the production of lightning rods is to be erected at Atlantic, Iowa, by H. S. Rattenborg.

The Stirling Portland Cement Company, Louisiana, Mo., expects to be able within the next month or two to decide upon the machinery requirements of the new plant which it proposes to build.

The West Coast Portland Cement Company, J. M. Edwards, secretary, Spokane, Wash., will build a 1000-bbl. mill at some point in Idaho as soon as the bonds of the company have been placed.

Plans have been drawn for a new plant to be occupied by the Michigan Buggy Company, Kalamazoo, Mich. Some woodworking tools, hydraulic pressure machines and power apparatus will be needed.

A triplex deep well pump, with gasoline engine, will be purchased by Belden, Neb., on or after November 4, also a steel standpipe, a quantity of iron conduits, hydrants, valves, &c.

The Moline Automobile Company, Minneapolis, Minn., is preparing to put up a large plant.

The John R. Kelm Mills Company, Buffalo, N. Y., manufacturer of automobile and motor cycle parts and pressed steel hardware, will erect a steel furnace quadrangular addition, 20 x 68 ft., 26 x 58 ft., and 22 x 58 ft., for the enlargement of its manufacturing plant at Kensington avenue and the Erie Railroad.

The Detroit Copper & Brass Company, Detroit, Mich., is having plans prepared for a large addition to its plant.

The Pierce-Arrow Motor Car Company, Buffalo, N. Y., is having plans drawn for an additional building, 35 x 450 ft., of reinforced concrete, supplemental to the two large factory buildings now under construction.

Work has been commenced upon a coal handling plant to be erected by the H. A. Hillmer Company, Freeport, Ill., which expects to have it ready for operation by the first of the year. It will be equipped with a 1400-ton coal elevator, contract for which has been let to the American Conveyor Company, Chicago.

The installation of motor-driven centrifugal pumps drawing water from the Yellowstone River is being considered by the authorities at Miles City, Mont.

An air compressor and drills will be needed shortly by the Black Tail Mining Company, Seattle, Wash.

The Cayuga Lake Cement Company, Ithaca, N. Y., has decided upon the erection of a new gyratory breaker plant. Mills for fine pulverizing will also be purchased.

The Kelsey-Herbert Wheel Company, Detroit, Mich., will add to its equipment for motor drive.

Clark & McCormack, Rockville, Minn., will be compelled this season to add to the machine equipment of their quarrying and finishing works.

The purchase of a pumping engine of 5,000,000 gal. capacity is under consideration by the city of Pontiac, Mich.

An extension has been planned for the works of the Buckeye Traction Ditcher Company, Findlay, Ohio, and work will be begun shortly on a new shop, 120 x 300 ft.

Enlarged capacity is needed by the Momence (Ill.) Electric Company, and an additional dynamo, with engine, will probably be installed within six months.

The Fredericksburg (Va.) Power Company is considering the building of a much larger generating station than the one now operated there.

A new gasoline engine or automatic four-valve steam engine will be required for the pumping station at Belle Plaine, Minn. The Yamhill Electric Company, Dayton, Ore., will be in the market shortly for power plant machinery.

One of the largest hydraulic power plants in the country will be built on the Clackamas River in Oregon if the present plans of the Southern Pacific Railroad are consummated. The machinery requirements in that event will total 150,000 hp.

The Empire District Electric Company, Galena, Kan., is planning the construction of a power plant of 15,000 kw. capacity, which will probably be equipped with steam turbines and turbo-generators. The intention is to distribute power to the industries and public utility companies of that section.

The board at Cozad, Neb., has decided upon the erection of a pumping station combined with electric power and lighting plant, and machinery requirements will be announced shortly.

James Cox, Boise, Idaho, expects to be in the market this winter for hydraulic turbines and generators with which to equip a power plant proposed for what is known as the Seven Devils mining district.

The Enid Gas & Electric Company, Enid, Okla., will enlarge its power equipment with a dynamo of 300 kw. and suitable exciter.

The Spring Valley Power Company, Pleasanton, Cal., has had plans drawn for the erection and equipment of a power house.

The Edisto Power Company, Orangeburg, S. C., proposes to build a hydro-electric plant of 5000 hp. capacity, or over, on the Edisto River.

The Great Northern Development Company, Duluth, is preparing plans for a hydro-electric power plant of 12,500 hp. near Anoka, Minn.

The pumping plant and municipal electric generating station at Crowley, La., which was destroyed by fire, will be reconstructed on a much more extensive scale. The engineering details, however, have not yet been worked out.

A Corliss engine or steam turbine, and probably electrical machinery, will be required for a mill which is to be built by the Thompson Lumber Company, Brent, Ala., to replace one which recently burned.

The electric power station and water works operated by the municipality of Napoleonville, La., will be reconstructed and new machinery purchased.

The receivership case against the American Engineering Company, Indianapolis, Ind., has been lifted, as the company is now in a solvent condition.

The Automatic Jack Company has been incorporated in Bloomfield, Ind., with a capital stock of \$30,000, to manufacture and sell a lifting jack and wire stretcher. The incorporators are P. J. Horrah, Chas. E. Benefield, Chas. E. Henderson.

The Virginia Blower & Heater Company, Richmond, Va., has removed to buildings on Fifteenth and Brown streets which give larger facilities for manufacturing than it had at its old location. The company now has a shop to do all classes of boiler work. The paid in capital has been increased to \$40,000.

The Clark Motor Car Company, which is building a plant at Shelbyville, Ind., has already turned away orders for 2500 machines and has taken a lease on a block of ground adjoining its present site, where it will build an addition that will double the plant's capacity.

An automobile company being organized by Ralph Lemcke, Frank Martindale and J. E. Matson of Indianapolis, Ind., has leased the buildings at Franklin, Ind., lately occupied by the American Harness & Leather Company. Mr. Matson, who has been connected with the American Gear Company, Indianapolis, will be superintendent of the new plant; Mr. Martindale, general manager.

The Miller Metalwork Company, Inc., is now occupying a shop at 401-411 St. Paul's avenue, Jersey City, N. J. The purpose of this company is to undertake difficult constructions and operations in all kinds of metals, such as tapering, bending and colling of any kind, shape and size of tubes and pipes or solid shapes; welding, brazing, tinning, spinning, plating, &c. A specialty will be made of machine parts of tubing and sheet metal. The directors consist of James Acton Miller, Elmer E. Miller and Philip Orin Miller. All members of the company have had a wide experience in designing difficult metal work in all its branches.

The Decatur Motor Car Company, Decatur, Ind., has been incorporated, with \$150,000 capital stock, to manufacture automobiles. It succeeds the Coppock Motor Car Company and has already begun operations. The directors are W. J. Vesey, J. S. Bowers, M. E. Brackett, C. C. Schafer, Julius Hough, Mathias Kirsch and L. A. Graham.

The Cayuga Lake Cement Company, Ithaca, N. Y., has started construction on four additional buildings, which will mean an increased output of 1500 barrels of cement daily to the present capacity of 1200 barrels. The additional work includes a boiler house 44 x 60 ft., an engine house 40 x 60 ft., addition to kiln building 64 x 80 ft. and an addition to the grinding room 20 x 120 ft. Orders have been placed for Keeler boilers, Erie engines, Murphy stokers and Allis-Chalmers crushing machinery.

The Crescent Tool Company, Carl Peterson, manager, Harrison and Foote avenues, Jamestown, N. Y., has its new drop forging plant well under way and expects to be ready to begin operations shortly after January 1, 1910. Orders have been placed for all machinery to be purchased at present, except a

case hardening plant with natural gas furnace, on which the company desires bids.

The Gurney Ball Bearing Company, Jamestown, N. Y., has incorporated with the following directors: Benjamin Nichols, William T. Falconer, Elliott C. Hall, Frederick W. Gurney and Arthur W. Kettle. The company has been engaged during the past two years in perfecting and manufacturing in leased quarters the Gurney ball bearings, largely used by the automobile industry. The company now contemplates erecting its own plant and engaging in manufacture on a much larger scale.

The Dunston-Weller Lithographing Company, Dunkirk, N. Y., has placed a contract with the Meister Contracting Company, Dunkirk, for the construction of a new factory building one story, 100 x 400 ft., of brick, concrete and steel construction.

The Haywood Wagon Company, manufacturer of a sheet steel contractors' dumping wagon, formerly of Baldwinsville, N. Y., has started construction on a large new plant at Newark, N. Y. The main building is to be 100 x 553 ft., with an addition for warehouse purposes 66 x 144 ft., construction to be of concrete. Plans for the buildings were prepared by D. Mills Platt of Rochester.

The plant of the Western Steel Car & Foundry Company at Anniston, Ala., will be put in operation about November 15.

The Webb-Baxter Company, Anderson, Ind., has been incorporated, with \$25,000 capital stock, to manufacture vacuum cleaners. The directors are H. D. Webb, Noah Baxter, N. P. Salling and C. I. Kemery.

The Police Department of New York will receive bids until October 26 for new low pressure heating boilers and general repairs and alterations to the present heating system at the 169th Precinct Police Station House, West Eighth street, Coney Island, Brooklyn.

E. W. Philippe, Ottumwa, Iowa, expects to install new power presses, brakes, drills and other machinery for the manufacture of heavy sheet metal work, with the intention of starting business January 1.

C. R. Rogers & Co., Inc., Corry, Pa., are completing a new concrete building, 60 x 100 ft., for use as a warehouse in storing building materials, electrical machinery, supplies, &c.

The Raymond Mfg. Company, Corry, Pa., manufacturer of springs, is operating its plant to full capacity on orders from automobile companies and machinery builders. It has installed a new 125-hp. Struthers-Wells gas engine and Crocker-Wheeler motors of 220 volts to drive its various machine tools. C. R. Rogers & Co., Inc., of Corry, engineers and contractors, erected the concrete foundation for the engine. In addition to R. R. Hammond & Co. of Philadelphia, the Raymond Mfg. Company is represented by the White Steel Company, Monadnock Building, Chicago, which looks after its Western interests.

The Ideal Auto Company, Ft. Wayne, has been incorporated with \$25,000 to manufacture automobiles and auto parts. The directors are F. K. Safford, M. L. Biltz and George B. Hall.

The Oswald Motor Company, Goshen, Ind., has increased its capital stock from \$30,000 to \$40,000. J. E. Newell is president.

The Indiana Motor & Mfg. Company has been organized at Indianapolis, Ind., with \$100,000 capital. It will build automobiles. The headquarters of the company are at Indianapolis and the factory at Franklin, Ind. It is planned to have the first machines ready by January 1. The output for 1910 has been contracted for by a well-known selling organization. John C. Billheimer is president of the company; Donald J. Hayden, secretary, and Charles B. Riley, general manager.

The Irvin Mfg. Company, maker of automobile tops, Indianapolis, Ind., will build a two-story brick factory, 50 x 140 ft., for which the plans have been completed.

A petition to revoke the confirmation of the recent sale of the Tidewater Steel Company, Chester, Pa., and set it aside was refused last week by the Delaware County courts. An amendment to open the books of the company for inspection was agreed to. The property, it is understood, was purchased in the interest of Youngstown, Ohio, parties, who propose to operate the plant.

William B. Harvey, receiver of the Solid Steel Castings Company, Chester, Pa., will, pursuant to an order of the Delaware County court, offer at public sale November 9 the property of the company, consisting of the land, foundry, machine shops, &c., located at Third and Broomall streets, Chester, Pa., together with the stock of materials on hand.

The Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., advanced wages 5 per cent. October 18 in all departments. This is the second increase of 5 per cent. that this company has recently given to its employees, and which now restores the rate of wages to those in force previous to the late depression.

The Iron and Metal Trades

New business going on the books of the large steel companies is very heavy and the problem of securing a sufficient supply of raw materials to take care of it is still present. Partly, no doubt, because the trade is growing used to the pace, there is less excitement than was apparent in September. Yet with some producers of pig iron, sales for the first half of October have been greater than for that portion of September, when fear of a runaway market was greatest.

Satisfaction is expressed that the talk of pig iron importations—and it is largely talk thus far—has acted as a check upon the advance. Beyond the cargo of foundry iron for New England and that taken by the leading pipe interest for an Eastern plant, no actual purchases are reported. The inquiry for 12,000 to 18,000 tons of low phosphorus pig iron for an eastern Pennsylvania steel foundry for next year, which came upon the domestic market this month, is now before British furnacemen also, and has figured in cables of the past week. Offers of English hematite have been made to steelmakers in this country. It is figured that with the drawback on exported steel made from this iron it would cost \$18.17 net, Pittsburgh. Even with Bessemer iron now at \$19.90, Pittsburgh, there is no likelihood of importations of such iron.

The buying of pig iron has kept up in the past week, and has included some liberal orders from foundries, chiefly for delivery in the first quarter and first half of 1910. Several sales of 5000 tons of foundry iron are reported, and pipe works have been buyers in Eastern markets. Prices in some markets have advanced 25c. to 50c., and sellers are not loading up for distant deliveries, in view of the higher costs they are facing for next year.

A sale of 12,000 tons and one of 5000 tons of basic iron were made for eastern Pennsylvania delivery in the first quarter of 1910, the former at \$18.50, but \$19 is now asked. At St. Louis two lots of 5000 tons each of basic iron were sold, one going to a Virginia furnace.

Bessemer pig iron has advanced to \$19, at Mahoning and Shenango Valley furnace, under buying for the first quarter of next year. An important Pittsburgh steel interest is reported in the market.

The scarcity of billets is even more acute. Considerably higher prices are named for delivery next year.

In finished material the pressure upon the mills is increasing in some lines, while in some of the lighter products that have been quieter for a little time there is renewed activity. In the case of the United States Steel Corporation the plans for putting the Zanesville furnace in blast and the starting up of the Columbus steel plant on sheet bars—both high cost works—indicate that every means of production must be utilized.

The starting of the Columbus steel plant marks the gradual breaking of the strike in the Steel Corporation's tin plate mills, working forces having been increased considerably in the past week.

As an indication of the remarkable demand upon bar mills is the fact that one important producer of twisted bars for concrete has shipped more of that product in 1909 than in both 1907 and 1908.

New structural contracts include 3500 tons for the Interborough car yards in New York, taken by the Pennsylvania Steel Company, and 2500 tons for the Commonwealth Edison Company, Chicago. Railroad bridge requirements for 1910 are expected to be heavy. The announcement is made of the starting of work on a new structural mill in the Chicago District, increasing the production there 50 per cent., or by 15,000 tons a month.

No large rail sales are reported, but two important contracts are pending. The Winston-Salem South Bound has divided its order between the Pittsburgh and an Eastern mill. Several rail mills could take considerably more business for this year, and arrangements may be made for advancing some January rollings into December.

Orders for about 3500 cars have been placed, and more are pending. While car work is not yet heavy, the ability of the mills to take care of car works requirements over and above the present rate is questioned. Lake shipyards are figuring on three or four more boats and work for next winter is expected to be heavy.

On Tuesday structural and boiler rivets were advanced \$3 a ton and on the same day bolts and nuts were advanced 5 per cent.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

	Oct. 20, 1909	Oct. 13, 1909	Sept. 22, 1909	Oct. 21, 1908
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	\$18.75	\$18.50	\$18.25	\$16.75
Foundry No. 2, Southern, Cincinnati	18.25	17.75	17.75	15.75
Foundry No. 2, local, Chicago	19.00	19.00	19.00	16.85
Basic, delivered, eastern Pa.	18.50	18.00	18.00	16.00
Basic, Valley furnace	17.00	17.00	16.00	13.85
Bessemer, Pittsburgh	19.90	19.40	18.40	15.65
Gray forge, Pittsburgh	17.15	16.90	16.40	14.40
Lake Superior charcoal, Chicago	19.50	19.50	19.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	27.00	26.00	25.00	25.00
Forging billets, Pittsburgh	30.00	29.00	29.00	27.00
Open hearth billets, Philadelphia	28.60	28.60	27.60	26.20
Wire rods, Pittsburgh	32.00	32.00	31.50	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	18.00	17.75	16.50	14.75
Steel rails, melting, Philadelphia	18.00	18.00	17.50	15.00
Iron rails, Chicago	20.50	20.50	19.00	18.00
Iron rails, Philadelphia	21.00	21.00	20.50	19.50
Car wheels, Chicago	18.25	18.25	18.50	15.25
Car wheels, Philadelphia	17.50	17.50	17.00	15.00
Heavy steel scrap, Pittsburgh	18.00	18.00	17.50	15.25
Heavy steel scrap, Chicago	16.50	16.50	16.00	13.75
Heavy steel scrap, Philadelphia	18.00	18.00	17.25	15.50
FINISHED IRON AND STEEL,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.60	1.57	1.55	1.45
Common iron bars, Chicago	1.55	1.50	1.50	1.50
Common iron bars, Pittsburgh	1.65	1.65	1.50	1.40
Steel bars, tidewater, New York	1.71	1.66	1.56	1.56
Steel bars, Pittsburgh	1.55	1.50	1.40	1.40
Tank plates, tidewater, New York	1.66	1.66	1.66	1.76
Tank plates, Pittsburgh	1.50	1.50	1.50	1.60
Beams, tidewater, New York	1.66	1.66	1.66	1.76
Beams, Pittsburgh	1.50	1.50	1.50	1.60
Angles, tidewater, New York	1.66	1.66	1.66	1.76
Angles, Pittsburgh	1.50	1.50	1.50	1.60
Skelp, grooved steel, Pittsburgh	1.45	1.45	1.40	1.45
Skelp, sheared steel, Pittsburgh	1.55	1.55	1.50	1.50
SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.30	2.30	2.20	2.50
Wire nails, Pittsburgh	1.80	1.80	1.80	1.95
Cut nails, Pittsburgh	1.80	1.80	1.75	1.75
Barb wire, galv., Pittsburgh	2.10	2.10	2.10	2.40
METALS, Per Pound:				
	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	13.09	13.00	13.50	13.75
Electrolytic copper, New York	12.75	12.90	13.00	13.25
Spelter, New York	6.25	5.90	5.85	4.77½
Spelter, St. Louis	6.10	5.75	5.70	4.62½
Lead, New York	4.40	4.37½	4.38	4.22½
Lead, St. Louis	4.25	4.25	4.30	4.07½
Tin, New York	30.40	30.25	29.15	29.50
Antimony, Hallett, New York	8.25	8.30	8.30	7.75
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	\$3.74	\$3.74	\$3.64	\$3.80

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.50c., net; I-beams over 15 in., 1.60c., net; H-beams over 8 in., 1.70c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.55c., net; angles, over 6 in., 1.60c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.70c., base, half extras, steel bar card; tees, 3 in. and up, 1.60c., net; zeos, 3 in. and up, 1.55c., net; angles, channels and tees, under 3 in., 1.45c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.75c., net; hand rail tees, 2.75c., net; checkered and corrugated plates, 2.75c., net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.50c. to 1.60c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edges, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered $\frac{3}{4}$ -in. plate. Steel plates over 72 in. wide must be ordered $\frac{3}{4}$ -in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide, ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under $\frac{1}{4}$ -in. to and including 3-16-in. plates on thin edges.....	\$0.10
Gauges under 3-16-in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete circles.....	.20
Boiler and flange steel plates.....	.10
"A. B. M. A." and ordinary firebox steel plates.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in.....	.05
For widths over 110 in. up to 115 in.....	.10
For widths over 115 in. up to 120 in.....	.15
For widths over 120 in. up to 125 in.....	.25
For widths over 125 in. up to 130 in.....	.50
For widths over 130 in.....	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, 1.65c.; Nos. 9 and 10, 1.70c.; Nos. 11 and 12, 1.75c.; Nos. 13 and 14, 1.80c.; Nos. 15 and 16, 1.90c.; box annealed sheets, Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c.; No. 29, 2.35c.; No. 30, 2.45c.; galvanized sheets, Nos. 13 and 14, 2.35c.; Nos. 15 and 16, 2.45c.; Nos. 17 to 21, 2.60c.; Nos. 22 to 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.15c.; No. 28, 3.35c.; No. 29, 3.45c.; No. 30, 3.70c. Painted roofing sheets, No. 28, \$1.60 per square. Galvanized roofing sheets, No. 28, \$2.85 per square for $2\frac{1}{2}$ -in. corrugations.

Wrought Pipe.—Discounts on steel pipe, $\frac{3}{4}$ to 6 in., in carloads to the largest trade, are 80 and 5 per cent. off list, and on iron pipe, $\frac{3}{4}$ to 6 in., are 75 and 5 per cent. off list.

Boiler Tubes.—Regular discounts, effective from October 1, 1909, on steel and charcoal iron boiler tubes, are as follows:

	Steel.	Iron.
1 to $1\frac{1}{2}$ in.....	.49	.43
$1\frac{1}{2}$ to $2\frac{1}{4}$ in.....	.61	.43
$2\frac{1}{2}$ in.....	.63	.48
$2\frac{3}{4}$ to 5 in.....	.69	.55
6 to 13 in.....	.61	.43
$2\frac{1}{2}$ in and smaller, over 18 ft. long, 10 per cent. net extra.		
$2\frac{3}{4}$ in and larger, over 22 ft. long, 10 per cent. net extra.		

Wire Rods.—Bessemer, open hearth and chain rods, \$32.

Steel Rivets.—Structural rivets, 2.05c., base; boiler rivets, 2.15c., base, subject to usual extras.

Chicago.

FISHER BUILDING, October 20, 1909.—(By Telegraph.)

Consumers of finished and semifinished material are more concerned just now about getting it than they are about the price at which it is held. Any producer of billets, bars, plates and shapes who is able to furnish such products promptly can command prices considerably above those quoted as representing the market minimum. At the same time the feeling exists among the leading mill interests that a precipitate advance to higher levels would not tend to promote stability, and that such a movement if carried too far would certainly affect the market adversely. On such tonnage as it is booking at present, the principal interest in this market is holding steel bars at 1.40c. and plates and shapes at 1.50c., Pittsburgh basis. But the deliveries it is able to promise are too far ahead for the consideration of consumers, whose requirements demand prompt attention. While the mills are not openly soliciting business for shipments extending from January to July of next year, some contracts for this period are being entered, but the extent of this movement is not yet apparent. Outside of such contracts new buying is comparatively light. Railroad buying is not as heavy as it was a few weeks ago, but there has been no let up in this quarter in urgency of demand for shipments of specifications against existing contracts. While new rail purchases of last week amounted to but 21,000 tons, negotiations are pending for some round lots, and the prospects are that the rail tonnage booked for 1910 will be materially increased in the near future. It is expected that the opening of books by Southern furnaces will be followed by the entry of considerable business in the next week or two. The fact that several large consumers are considering the purchase of good sized quantities lends color to this belief.

Pig Iron.—The demand for pig iron the past week has centered mainly upon basic. A sale of 5000 tons of Virginia basic was made to the St. Louis plant of a large steel foundry interest, which it is understood has also purchased an additional 5000 tons in the St. Louis market. Buying

of foundry iron has been a little more active than in the previous week, the greater part going to the Northern furnaces, especially on inquiries for prompt requirements. Demand of the latter sort keeps up better than was anticipated some weeks ago, a fact that seems to indicate more or less shortage in the earlier estimates made of iron required for fourth quarter consumption. It is nevertheless true that the majority of foundry interests are fairly well covered for this period, but it is also certain that the melt is steadily increasing. The malleable foundries are exceptionally busy, and a considerable share of last week's transactions was comprised of malleable Bessemer. Among other inquiries in the market for this grade are two of 2500 tons each. The local manufacturer referred to in the last report, as taking prices on 16,000 tons of Southern iron for deliveries a year ahead, finally purchased a portion of this amount for shipment through the second quarter, taking 2500 tons of 6 per cent. silicon. Most of the Southern furnaces have signified their willingness to book orders through the entire first half at \$15, Birmingham, for No. 2 foundry, and it is understood that several round lots are now under consideration, with a likelihood of early closure. The leading Southern furnaces insist that they will consider nothing under that price for any delivery, but occasional carloads and small lots of prompt iron are being placed on a basis of \$14.50. As far as can be ascertained, the amount of iron changing hands at this figure is very limited, and is comprised chiefly of resale lots in the hands of brokers. With this exception, the market is firm at \$15, Birmingham. Scarcity of cars is becoming more pronounced, and in several instances furnacemen report that shipments are falling behind on this account. But for the fact that melters are not as a rule working from hand to mouth, and are therefore not wholly dependent upon prompt service for material to keep their plants going, conditions would be even more unsatisfactory than they now are. The following quotations are for October, November and December delivery f.o.b. Chicago:

Lake Superior charcoal.....	\$19.50 to \$20.00
Northern coke foundry, No. 1.....	19.50 to 20.00
Northern coke foundry, No. 2.....	19.00 to 19.50
Northern coke foundry, No. 3.....	18.50 to 19.00
Northern Scotch, No. 1.....	19.00 to 19.50
Southern coke, No. 1.....	19.85 to 20.35
Southern coke, No. 2.....	19.35 to 19.85
Southern coke, No. 3.....	18.85 to 19.35
Southern coke, No. 4.....	18.35 to 18.85
Southern coke, No. 1 soft.....	19.85 to 20.35
Southern coke, No. 2 soft.....	19.35 to 19.85
Southern gray forge.....	17.85 to 18.35
Southern mottled.....	17.60 to 18.10
Malleable Bessemer.....	18.50 to 19.00
Standard Bessemer.....	20.90 to 21.40
Jackson Co. and Kentucky silvery, 6%.....	20.40 to 20.90
Jackson Co. and Kentucky silvery, 8%.....	21.40 to 21.90
Jackson Co. and Kentucky silvery, 10%.....	22.40 to 22.90

(By Mail.)

Billets.—Scarcity of steel still prevents local mills from offering any billets in the open market. A Pittsburgh interest which until recently has been supplying some has withdrawn from the market and declines to quote. Prompt shipment of forging billets is difficult to secure from any source.

Rails and Track Supplies.—Taking advantage of favorable fall weather, railroads are crowding track work with all possible dispatch, and are, in consequence, calling upon the mills for shipments of material as fast as they can be made. This is true not only of rails, but fastenings as well, including bolts, spikes and rail joints. There is no lack of specifications coming to the mills on any of these items and, on bolts especially, capacities are overcrowded. New heavy rail orders aggregating 21,000 tons, all for 1910 delivery, were received last week by the Illinois Steel Company. Of this amount 14,000 tons was taken by one Northern line, the remainder being comprised of scattered lots from various sources. With the exception of 2000 tons, the rails ordered were Bessemer. Inquiries are now pending for several other lots representing a round aggregate on which early closure is expected. In outside territory concessions on spikes are reported, but in this district the price here quoted is said to be firmly maintained. We quote standard railroad spikes at 1.80c., base; track bolts and square nuts, 2.25c. to 2.50c., base, all in car lots, Chicago. Light rails, 40 to 45 lb., \$26; 30 to 35 lb., \$26.75; 16, 20 and 25 lb., \$27; 12-lb., \$28, Chicago, less 50c. a ton on lots of 500 tons and \$1 a ton on lots over 500 tons.

Structural Material.—Another light week has been experienced in this market, in which the lettings reported are mostly small and few in number. The leading transaction of the week was the placing of the Commonwealth Edison Company's contract for improvements at the Quarry street station, involving 2500 tons, with Geo. W. Jackson, Inc. The Scarborough office building, Austin, Texas, 777 tons, went to the Noelke-Richards Company. New business secured by the American Bridge Company included 270 tons for an addition to the Chamber of Commerce building, Denver; 250 tons for the Twin City Rapid Transit power house, Minneapolis, and 225 tons for the University of Colorado auditorium building. Railroads have specified up very close on existing contracts, and negotiations for material required

to go ahead with spring work will probably begin shortly. Because of the tardy arrival of material from mill the leading fabricating interest is unable to operate more than 66 per cent. of its shop capacity. All shops are similarly affected, but not in like degree, though in many instances recourse is had to jobbers' stocks for prompt material. Few mills are able to take orders for shipment prior to January 1, and a good many are asking \$2 a ton above the market minimum. We quote plain material from mill 1.68c. to 1.78c., Chicago; from store, 1.90c., Chicago.

Sheets.—The sheet mills are being pressed for deliveries which in most cases are several weeks behind. A good many inquiries are being received from consumers regarding requirements covering the first three months of next year, but the mills are manifesting no eagerness to take anything large that far ahead. Business of this kind has been declined by the local interest, which is striving to make headway against the accumulated specifications now in hand. Mill prices are very firm at the recent advance. The demand for prompt shipment is being largely met by shipment from jobbers' stocks, which are moving freely. Store prices are maintained on a basis of 2.85c. to 2.95c. for No. 28 black, and 3.90c. to 4c. for No. 28 galvanized.

Bars.—The demand for bars continues very heavy, and no appreciable improvement in mill deliveries is noted. While the taking of contracts covering requirements up to July is not general with the mills, some have been placed. But thus far it seems that such commitments are made at the solicitation of the buyer rather than the seller. It is understood that the leading jobbers have decided to adopt the new bar card issued October 1 by a prominent independent mill interest in which the extras are double those carried on the new card adopted by the Carnegie Steel Company. Quotations on this card will be made on the basis of half extras, according to the custom heretofore prevailing in connection with the old card. There is a spread of \$2 a ton in the price quoted by various mills, the maximum being easily obtained for prompt shipments, and in some instances realized on contracts for future delivery. We quote steel bars at 1.58c. to 1.68c.; bar iron, 1.55c. to 1.60c.; hard steel bars rolled from old rails, 1.50c. to 1.55c., all Chicago.

Plates.—Inability of the mills to promptly turn out plates required for new car construction is retarding operations in the local car shops. The Standard Steel Car Works, which expected to have its freight car department in operation by this time, is still waiting for material, but will probably commence work about the first of the month. Specifications from this and other sources are very heavy, and the South Chicago mills will have all they can do to dispose of orders now on the books by the first of the year. Reasonably prompt shipments command prices \$1 to \$2 a ton above the market minimum. We quote mill prices at 1.68c. to 1.78c., Chicago; store prices, 1.90c., Chicago.

Merchant Pipe.—A good demand is reported from jobbers, whose stocks require frequent replenishment to maintain size assortments. Shipments to territory in the Northwest enjoying advantageous water rates is especially heavy, owing to the approaching close of navigation. Trade in general is satisfactory, and the prices recently established by an advance of \$2 a ton are reported to be firmly maintained.

Boiler Tubes.—While mill orders for merchant tubes are somewhat more liberal, activity in locomotive tubes is more pronounced. Practically all motive power equipment is in service on the various roads, and preparation for the severe requirements of winter calls for more tubes for repair work.

Cast Iron Pipe.—A contract for 750 tons, let by Newark, Ohio, went to James B. Clow & Sons. Included in last week's transactions were a number of small municipal lettings throughout the West and Southwest. Scarcity of labor in the Northwest has interfered with work on municipal improvements calling for cast iron pipe, which otherwise might have been undertaken. Most of the business now in the market is coming from Southern territory, where open weather prevails later in the season. We quote per net ton Chicago as follows: Water pipe, 4-in., \$28.50; 6 to 12 in., \$27.50; 16-in. and up, \$26.50, with \$1 extra for gas pipe.

Old Metals.—A sharp advance in spelter is noted, but the demand has not increased correspondingly. The firming up of the market on this metal is attributed rather to the policy of ore producers in withholding shipments to the smelters than to increased consumption. Last week's transactions in copper developed a fair trade in small lots for immediate use, but prices continue weak with some shading on spot requirements. There is little doing in future contracts, though the market holds a little firmer on such transactions. We quote as follows: Casting copper, 13c.; lake, 13½c., in carloads, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, car lots, 31½c.; small lots, 33c.; lead, desilverized, 4.45c. to 4.55c., for 50-ton lots; corroding, 4.70c. to 4.80c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.10c. to 6.15c.; Cookson's antimony, 10½c., and other grades, 9½c. to 10½c.; sheet zinc is \$7.75, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13½c.; copper bottoms,

11½c.; copper clips, 12½c.; red brass, 11½c.; yellow brass, 9½c.; light brass, 6½c.; lead pipe, 4½c.; zinc, 4.50c.; pewter, No. 1, 23c.; tin foil, 25c.; block tin pipe, 27c.

Old Material.—The market has settled down to a state of comparative quiet, and, while a softening tendency has developed on some grades, values as a whole are without material change. There is a fair demand for borings, and dealers are offering \$7.75 per net ton for shipment to the Pittsburgh District. Certain grades of rolling mill material are in fair demand, one of the mills having been an active purchaser during the past week. Quite a number of holders of old car wheels are offering them, but at prices which consumers will not at present consider. The only sale of old car wheels reported is one of 200 tons, which was closed on a basis of \$18, Chicago; but dealers generally are asking from 50c. to \$1 a ton above this price. The demand for melting steel continues very active, and short steel rails, 3 ft. and under, have moved up to a parity with rerolling rails. Foundry scrap is a little easier, and recent sales have indicated that top prices are no longer realized. Very little of the material included in the list offered last week by the Northern Pacific reached this market, the most of it, it is understood, having been taken in Minneapolis and St. Paul. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails.....	\$21.00 to \$21.50
Old steel rails, rerolling.....	18.00 to 18.50
Old steel rails, less than 3 ft.....	18.00 to 18.50
Rerolling rails, standard sections, subject to inspection.....	23.50 to 24.50
Old car wheels.....	18.25 to 18.75
Heavy melting steel scrap.....	16.50 to 17.00
Frogs, switches and guards, cut apart..	16.75 to 17.25
Shoveling steel.....	16.00 to 16.50

The following quotations are per net ton:

Iron angles and splice bars.....	\$18.00 to \$18.50
Iron car axles.....	21.00 to 21.50
Steel car axles.....	20.50 to 21.00
No. 1 railroad wrought.....	16.00 to 16.50
No. 2 railroad wrought.....	15.00 to 15.50
Springs, knuckles and couplers.....	15.50 to 16.00
Locomotive tires, smooth.....	17.00 to 17.50
No. 1 dealers' forge.....	13.50 to 14.00
Steel axle turnings.....	11.75 to 12.25
Machine shop turnings.....	11.00 to 11.50
Cast and mixed borings.....	7.50 to 8.00
No. 1 busheling.....	13.75 to 14.25
No. 2 busheling.....	10.25 to 10.75
No. 1 boilers, cut to sheets and rings..	11.50 to 12.00
No. 1 cast scrap.....	15.25 to 15.75
Stove plate and light cast scrap.....	13.00 to 13.50
Railroad malleable.....	15.25 to 15.75
Agricultural malleable.....	13.50 to 14.00
Pipes and flues.....	12.00 to 12.50

Birmingham.

BIRMINGHAM, ALA., October 18, 1909.

Pig Iron.—The most significant transaction known to have been recorded in this market during the week just ended involved 5000 tons for shipment over the first half of next year. The price considered in this transaction was a basis of \$15, Birmingham, for No. 2 foundry, with a differential of 50c. per ton for the lower grades. A lot of 2000 tons for shipment during the last quarter is reported sold at the \$15 schedule, as is a lot of 1500 tons for shipment commencing immediately and extending into the first quarter. Small lots of high manganese iron have recently brought \$16, Birmingham, and gray forge and mottled in comparatively small lots sold during the week at a differential of 25c. per ton on the \$15 base for No. 2 foundry. The demand has been of rather a desultory nature, with the majority of melters still disposed to consider bargain lots only. Such lots are less frequently heard of, and the quotations of merchant interests are identical with those of the furnace companies. It is probable that some merchant iron is yet available at slight departures from the established quotation when a firm offer is made for a stipulated amount, but there is no special effort being made by the merchants to elicit such offers. The theory that the trade generally is willing to await further developments before making additional provision for advance requirements is apparently accepted by the producing interests, who are in the meantime making every effort to effect delivery of iron previously sold in accordance with the specifications. In no case is it understood that order books for the second quarter have been opened for commitments. There has been some tonnage accepted for shipment within that period, but the contracts have been entered under special conditions, as would be the case to-day with similar contracts. A large producer has within the week practically withdrawn from the market by the adoption of prohibitive asking prices for any delivery.

Cast Iron Pipe.—Latest reports relative to this market are without specific information as to lettings of consequence for the immediate future. A number of bond issues for improvements and extensions have been definitely decided upon within the week, but specifications actually submitted involve a comparatively small aggregate. The majority of producers, however, are not solicitous of orders and in no case are there visible stock accumulations with all capacity in full operation. A leading producing interest has advanced quo-

tations \$1 per ton and has been practically out of the market by reason of condition of order books for some weeks past. We quote water pipe as follows, per net ton, f.o.b. cars here, which prices are believed to be lowest figures available in any case: 4 to 6 in., \$26; 8 to 12 in., \$25; over 12-in., average \$24, with \$1 per ton extra for gas pipe.

Old Material.—The demand for heavy melting steel and No. 1 machinery scrap has predominated during the week. A fairly attractive tonnage of both grades mentioned has changed hands and dealers are apparently satisfied with prices received. The scarcity of light cast and stove plate is complained of, and there is as yet no material addition to stocks of wrought scrap and old car wheels. Prices are unchanged, although all grades are believed to be stronger by reason of latest transactions, and we quote as follows, per gross ton, f.o.b. cars here:

Old iron rails.....	\$17.50 to \$18.00
Old iron axles.....	18.50 to 19.00
Old steel axles.....	16.50 to 17.00
No. 1 railroad wrought.....	13.50 to 14.00
No. 2 railroad wrought.....	11.50 to 12.00
No. 1 country.....	11.00 to 11.50
No. 2 country.....	10.50 to 11.00
No. 1 machinery.....	12.50 to 13.00
No. 1 steel.....	12.50 to 13.00
Tram car wheels.....	11.50 to 12.00
Standard car wheels.....	13.00 to 13.50
Light cast and stove plate.....	11.50 to 12.00
Cast borings.....	6.00 to 6.50

Pittsburgh.

PARK BUILDING, October 20, 1909.—(By Telegraph.)

Pig Iron.—No large sales of Bessemer have been made since the purchase last week of 20,000 tons by the Republic Iron & Steel Company from the Bessemer Pig Iron Association at \$19, Valley furnace, for delivery in the first quarter of next year. A steel company that bought some time ago a block of Bessemer iron for delivery in the last quarter of this year is said to be negotiating for another large lot for shipment in the first quarter of next year. If the iron is bought it will be furnished by the Bessemer Pig Iron Association. The Carnegie Steel Company is now operating 57 of its 59 blast furnaces, and next week will start the Zanesville Furnace and a little later the Steubenville Furnace, when all its stacks will be active. The market is very strong, but it is the opinion of the conservative element in the trade that any further attempt to boom prices would be a mistake, as it would open the way for importing foreign iron and this is not desired. We quote Bessemer iron, \$19 for rest of this year and first quarter of next year; basic, \$17 for prompt shipment and \$17.50 for first quarter; malleable Bessemer, \$17.75 to \$18; No. 2 foundry, \$17.25 to \$17.50, and gray forge \$16.25 to \$16.50, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton. We note sales of 300 tons of No. 2 foundry at \$17.50 for prompt shipment; 1500 tons for balance of this year at \$17.25; 1000 tons of gray forge for this and next month at \$16.25, and 1000 tons for next three months at \$16.50, all at Valley furnace.

Steel.—There are few new inquiries in the market, as practically all consumers of billets and sheet and tin bars are covered by special contracts, and are consequently getting their steel at somewhat lower prices than are being paid for prompt deliveries. Reports are believed that Bessemer billets for spot shipment have sold at \$27 and open hearth at \$27.50 to \$28. It is stated that several lots of sheet and tin bars for prompt shipment have sold at \$28 and higher, at maker's mill. Forging billets are held at \$30, maker's mill, and they are very scarce. An inquiry is in the market for 10,000 tons of forging blooms for delivery over the next three or four months, but it is probable the customer will have trouble in finding a mill that can spare this tonnage of steel at present.

(By Mail.)

The past week has been the quietest the steel trade has had for some time, which is taken to mean that consumers have pretty well covered their requirements for some time ahead, and are temporarily out of the market. This lull in demand, or whatever it may be called, is rather welcomed by the mills which are badly oversold and are steadily getting further behind in deliveries. There is not a sign anywhere of any weakening in prices, the main trouble in the trade at present being for consumers to get deliveries from the mills. The pig iron market continues very strong; while the local inquiry is light, a good deal is coming from Eastern and Western consumers. It is not expected that much of this inquiry will develop in actual business for local furnaces, freight rates being against them. The purchase of 20,000 tons of Bessemer pig iron last week by the Republic Iron & Steel Company, through J. G. Butler, Jr., of the Bessemer Pig Iron Association, has squarely fixed the price of that grade for first quarter delivery at \$19, Valley furnace. The company made this purchase to protect itself against any possible shortage in supply of metal, as it will soon be a heavier user of pig iron than ever before. Its

new tube mill will be ready for operation in the early part of the year, and its new open hearth plant, to be built at Youngstown, will also be a heavy consumer of pig iron. While there is not much local inquiry for Bessemer iron for balance of this year, it is very scarce and will readily bring \$19, at furnace. A leading local consumer, that bought a heavy tonnage of pig iron some time ago, is reported to be in the market again with a large inquiry for first quarter delivery, but this has not been verified. The independent sheet and tin plate mills have not yet been advised by the Carnegie Steel Company as to what price will rule on sheet and tin bars for first quarter delivery. So far the company has not fixed the price, not because it expects to get more by holding off, but simply for the reason that it desires to be sure that it will have sheet and tin bars for the open market before it makes engagements to furnish them. The shortage in supply of steel seems to be getting worse, and standard sizes of Bessemer billets for prompt delivery have sold as high as \$27, Pittsburgh. Sheet and tin bars for prompt delivery have sold as high as \$29 in small lots, but it may be noted that few legitimate inquiries for steel come in the market, as practically all consumers are covered by contracts. Specifications on contracts for finished material are still coming in freely, and the mills are getting further behind in deliveries. Consumers of blast furnace coke are holding off, making contracts for next year on account of the high prices asked by the coke makers. The scrap trade is very firm, and dealers are selling a fair amount of material.

Ferromanganese.—With a fair amount of new inquiry, prices are strong and slightly higher. We quote 80 per cent. foreign at \$64 for this year and \$64.50 to \$65, seaboard, for first half of next year, the freight to Pittsburgh being \$1.95 a ton.

Ferrosilicon.—The demand continues quite active, and prices are firm. We quote 10 per cent. at \$22.90; 11 per cent., \$24.90; 12 per cent., \$25.90, and 50 per cent., \$63.50 to \$64, Pittsburgh. We note a sale of one car, or about 30 tons, for prompt delivery at the last mentioned price.

Muck Bar.—Some inquiry is being received for muck bar, but the available supply for prompt delivery is limited. Nearly all makers of muck bar are using their output in their own finishing mills. We quote best grades of muck bar, made from all pig iron, at \$29 to \$29.50, Pittsburgh.

Wire Rods.—Large consumers of wire rods, such as chain makers and others, are anxious to contract for their supply of rods for first quarter, but the rod makers are asking a premium for such delivery. The market is firm, and we quote Bessemer, open hearth and chain rods at \$32, Pittsburgh.

Skelp.—The demand continues very active, especially for grooved and sheared iron plates, and prices are firm. We quote: Grooved steel skelp, 1.45c. to 1.50c.; sheared, 1.55c. to 1.60c.; grooved iron plates, 1.75c. to 1.85c., and sheared iron plates at 1.90c. to 1.95c., all for ordinary widths and gauges, f.o.b. Pittsburgh.

Steel Rails.—The inquiry of the New York Central for its supply of rails for next year has not yet come out. The Lehigh Valley and the Philadelphia & Reading Railroads are each in the market for 10,000 tons of rails for delivery in the first three or four months of next year. In the past week the Carnegie Steel Company received new orders and specifications against contracts for 2740 tons of light rails. The United States Rail Company is the name of the new concern that has succeeded the Maryland Rail Company at Cumberland, Md., and will make light steel rails, joints and spikes. We quote steel axles at 1.75c. to 1.80c., and splice bars, 1.50c., at mill, Pittsburgh. Light rail prices are as follows: 8 to 10 lb., \$32; 12 to 14 lb., \$29; 16, 20 and 25 lb., \$28; 30 and 35 lb., \$27.75, and 40 and 45 lb., \$27, Pittsburgh. These prices are for 250-ton lots and over, and for small lots premiums of 50c. per ton and more are being paid. We quote standard sections at \$28, at mill.

Plates.—A number of fairly large orders for steel and steel underframe cars have been placed in the past week, and the plates and other shapes for most of these will be rolled by local mills. The Great Northern has ordered 1000 ore cars from the Pressed Steel Car Company, and the Lehigh Valley 750 50-ton gondolas and 150 refrigerator cars from the Standard Steel Car Company and 250 50-ton gondolas from the Cambria Steel Company. It is said that the New York Central is in the market for nearly 4000 steel cars, and orders from other roads are expected in a short time. The Louisville & Nashville Railroad is building 1100 freight cars in its own shops at Decatur, Ala. The Seaboard Air Line has placed an order for 1000 box cars with the Pressed Steel Car Company, and some passenger coaches to the Barney & Smith Car Company, Dayton, Ohio. The general demand for plates is fairly heavy, and the mills are filled with specifications for the next two or three months. Plates for prompt shipment command premiums. We quote ¼-in. and heavier plates at 1.50c., for forward delivery, and 1.55c. to 1.60c. for reasonably prompt shipment.

Structural Material.—The situation has quieted down; no large jobs have been placed in this district in the past

week. The McClintic-Marshall Construction Company has taken 300 tons for a city bridge at Wheeling, and the American Bridge Company 3000 to 4000 tons for bridges for a Western railroad. The mills seem to be getting further behind in shipments. We quote beams and channels up to 15-in. at 1.50c. to 1.60c., Pittsburgh, prices depending largely on deliveries wanted by the customer.

Sheets.—A strong disposition is displayed by jobbers and large consumers to place contracts for both black and galvanized sheets for delivery far into next year, but as a rule the large makers are refusing to book contracts at present prices beyond the first quarter and are discouraging speculative buying as much as possible. The mills have booked a very large tonnage in both black and galvanized sheets for delivery up to April 1. The American Sheet & Tin Plate Company is operating 82 per cent. of its sheet mills, the only idle works of moment being Aetna-Standard at Bridgeport, which has 23 mills. Two of the hot sheet mills in the Canton Works of this company will start on Thursday and the other three will go on next week. The market is firm, cutting in prices having practically disappeared. Prices on blue annealed sheets, in effect by the American Sheet & Tin Plate Company and other producers, are as follows: Nos. 3 to 9, 1.65c.; Nos. 9 and 10, 1.70c.; Nos. 11 and 12, 1.75c.; Nos. 13 and 14, 1.80c., and Nos. 14 and 15, 1.90c. One-pass box annealed No. 28 black sheets are now 2.30c. and No. 28 galvanized 3.35c., at mill. We quote corrugated roofing sheets at \$1.60 per share for painted and \$2.85 for galvanized, 2½-in. corrugations. Jobbers charge the usual advances over these prices for small lots from store.

Tin Plate.—Some very heavy contracts for bright plate have been entered by the mills for delivery over the balance of this year and into the first quarter of next year. Some business has been entered for delivery into the second quarter, but these cases are exceptional. The American Sheet & Tin Plate Company is operating 70 per cent. of its tin mill capacity, having 158 serviceable hot tin mills in operation this week. The list of active plants includes: American, 18 hot tin mills; Cambridge, 7; Chester, 7; Crescent, 6; Monongahela, 8; National, 25; New Castle, 18; Pennsylvania, 8; Pittsburgh, 8; Sabraton, 10; Sharon, 17; Steubenville, 20; United States, 6. Five hot mills at the last named plant are idle this week on account of a broken engine shaft, but will be on next week. There is said to be a scarcity in the supply of tin plate for prompt shipment, and some mills are quoting premiums of 10c. to 15c. per box for spot shipment. We quote 100-lb. cokes at \$3.50 per base box, f.o.b. Pittsburgh, for the balance of this year and first quarter of next year.

Bars.—The large steel bar mills are being pushed by consumers for prompt deliveries, and there seems to be a decided shortage in the supply for early delivery. By reason of this fact some of the mills are able to get premiums of \$2 to \$4 a ton for prompt delivery, bars having sold for early shipment at 1.55c. to 1.60c. The mills are not disposed to sell beyond the first quarter, but several of the leading makers have entered a very heavy tonnage for delivery in the first quarter at 1.45c., at mill. For reasonably prompt shipment we quote steel bars at 1.55c. to 1.60c., at mill. There is an urgent demand for iron bars, and the mills are getting behind in deliveries. We quote iron bars at 1.65c., Pittsburgh, and the market is firm. Prices on both iron and steel bars depend largely on the tonnage involved and deliveries wanted.

Hoops and Bands.—New orders are coming in at a good rate. All the mills making hoops and bands are busy and have a good deal on their books. Prices on both hoops and bands are firm on account of the growing scarcity and higher prices of steel. We quote hoops for forward delivery at 1.50c., and for prompt delivery at 1.60c. to 1.65c., at mill. Steel bands are very firm at 1.40c. to 1.45c. on contracts and 1.50c. to 1.55c. for prompt shipment.

Spelter.—Prices have made another sharp advance, and prime grades of Western are held to-day at 6c. to 6.10c., East St. Louis, the freight to Pittsburgh being 12½c. A sale of 100 tons was made about a week ago for delivery in this market on the basis of about 5.90c., East St. Louis.

Spikes.—The New York Central is in the market with an inquiry for 25,000 kegs of spikes, and the Chesapeake & Ohio for 5000 kegs, and the latter business will probably go to the Tredgar Works. Prices on spikes are very firm, and for local trade standard sizes of railroad spikes are now held at \$1.75 to \$1.80, while for delivery in Eastern and Western territory \$1.70 to \$1.75 is quoted in carload and larger lots, with 5c. per keg advance for small lots.

Shafting.—New orders for shafting have been very heavy recently, and several of the local makers report a large increase in the business on their books. The market is firm, on the basis of 57 off in carload lots and 52 in less than carload lots, delivered in base territory and for delivery this year, while for delivery next year quotations are 55 in carload and larger lots and 50 off in less than carload lots, delivered in base territory.

Rivets.—A meeting of the leading rivet makers was

held Tuesday in New York City, and an advance of about \$3 a ton was made, owing to the continued scarcity and higher prices of steel. The demand for rivets is heavy, and the leading makers have a large amount of business on their books for delivery over the balance of this year. Prices are as follows: Structural rivets, ¾ in. and larger, 2.05c., base; cone head boiler rivets, ¾ in. and larger, 2.15c., base; ½ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Merchant Pipe.—The recent ruling by the courts that the producers of natural gas in Kansas can sell gas for delivery outside of that State will probably mean the laying of several large gas lines from the Kansas fields next year, it being too late to start such work this year. There is a good, steady demand for merchant pipe and oil country goods, and new orders are fully as large or larger than the output of the mills. Prices are very firm, and it is still the belief of the trade that an advance in steel pipe will be made at an early date. It is worthy of note that prices on steel pipe to-day are \$10 a ton lower than they were in the early part of this year, while prices on raw materials are fully as high as they have been in several years.

Boiler Tubes.—A good demand for locomotive tubes is coming from the railroads, to be used mostly in repair work, but the demand for merchant tubes is only fair. Some large contracts for locomotives having been placed lately, it is believed that good orders for locomotive tubes will result before long. The discounts now in force on steel and iron boiler tubes are printed elsewhere.

Iron and Steel Scrap.—The whole scrap market is very strong. The Pennsylvania and the Philadelphia & Reading scrap lists closed on the 13th, and high prices were paid. The United States Rail Company, formerly the Maryland Rail Company, at Cumberland, Md., is about ready to start and has bought quite a tonnage of rerolling rails, mostly from the Baltimore & Ohio Railroad, a number of officials of that road being interested in the new company. The Buckeye Rolling Mill Company, which took over the light rail plant of the Ohio Rail Company at Newark, Ohio, is now operating it. Aside from No. 1 cast scrap, which is higher, prices are as noted in this report last week, dealers quoting, per gross ton, as follows: Heavy steel scrap, for delivery at the principal consuming points, such as Steubenville, Follansbee, Monessen, Sharon and Pittsburgh, \$18; cast iron borings, \$11.50 to \$11.75; bundled sheet scrap, \$16.25 to \$16.50; low phosphorus melting stock, 0.04 and under, \$21.50; No. 1 cast scrap, cupola sizes, \$17.25 to \$17.50; No. 2, \$16 to \$16.25; sheet bar crop ends at shipping point, \$19 to \$19.50; No. 1 railroad malleable scrap, \$16.75 to \$17; grate bars, \$14.25 to \$14.50; rerolling rails, delivered at Cambridge and Newark, Ohio, \$18.25 to \$18.50; steel axles, \$22; locomotive axles, \$28 to \$28.50; iron axles, \$27 to \$27.50; No. 1 bushing scrap, \$16.50 to \$16.75; No. 2, \$13.50 to \$13.75; old car wheels, \$19 to \$19.25; machine shop turnings, \$13.25 to \$13.50; No. 1 railroad wrought scrap, \$18.50 to \$19. We note a sale of about 200 tons of No. 1 heavy cast scrap, cupola sizes, at \$17.25, and about 1000 tons of low phosphorus melting stock, 0.04 and under, at about \$21.35, Pittsburgh.

Coke.—Blast furnace interests are disposed to defer contracting for furnace coke for next year on account of the high prices asked. Standard makes of furnace coke for delivery over the first half of next year are held at \$2.90 to \$3 per net ton at oven. Best makes of 72-hour foundry coke for first half of next year continue to be held at \$3 to \$3.50 per net ton at oven. Furnace coke for shipment over the rest of this year is held at \$2.75 to \$2.80. The output of coke in the Upper and Lower Connellsville regions last week was 437,829 net tons, the heaviest in any one week in more than two years. There is still a shortage in labor in the coke regions, and the output is restricted to some extent on this account.

C. H. Lewis, formerly of the sales department of the Cherry Valley Iron Company, Pittsburgh and Cleveland, and Frank Lewis, of the sales department of McKeefrey & Co., Leetonia, Ohio, have organized the firm of C. H. Lewis & Co., with headquarters at 518 Citizens' Building, Cleveland, Ohio, and branch office at 718 Park Building, Pittsburgh, to deal in iron, steel, pig iron and coke.

The largest single shipment of steel ever made, it is believed, was started on its way to Davenport, Iowa, October 14, from the Bethlehem Steel Works, South Bethlehem, Pa. Loaded on 40 specially built pressed-steel cars, making a train one-third of a mile long, the 1500-ton shipment of beams was hauled by two huge locomotives. A remarkable feature is that the 1500-ton order was completed 24 hours after being received.

San Francisco.

SAN FRANCISCO, October 13, 1909.

The buying movement on finished materials appears to have reached its highest point for the year on the Pacific Coast, and while there has so far been little actual decrease in the volume of current business, the outlook is for a slightly less active movement during the next few months. The prospective requirements in certain branches are of less magnitude, while in other lines the increasing reluctance of Eastern interests to take additional business for early delivery to the coast is causing some delay in the placing of orders. Increasing firmness and activity are noted, however, in pig iron and old material, both of which are moving in a larger way than for over a year past. Most of the larger structural projects in San Francisco which are likely to be carried out in the near future have been provided for, and orders for fabricated material between now and next spring will probably be comparatively small. Sheets and plates continue in fair demand, some rather large requirements being reported in southern California. Inquiries for bars continue large, some rolling interests being practically out of the market, but with the heavy tonnage of foreign material which is believed to have been ordered the requirements are expected to show some decrease within the next few months. The advance on several lines of finished material in the East has brought greater firmness to the local jobbing market, though prices are still lower than conditions appear to warrant.

Rails.—A very active movement is going on in light rails, both from local jobbers and from the mills. Inquiries from the mining interests show considerable increase of late, some orders of individual importance having been placed for both rails and equipment. Small orders for standard sections amount to fully as large a tonnage as for the last two months, while several comparatively large inquiries have come up on which orders will probably be placed within a short time. A considerable tonnage of foreign light rails is said to have been ordered for delivery here, but no verification has been found of this report and none of this material has yet arrived.

Structural Material.—Recent fabricating contracts show a considerable increase of tonnage, owing to the letting of several large jobs which had been in prospect for several months. Work on some of these contracts will probably be delayed until after the first of the year, as the shops will be well occupied until that time. The provision made for the work now in hand leaves comparatively few structures of much magnitude in San Francisco in prospect, and the tonnage during the next few months will be principally for work of a smaller nature. The prospects are rather better in other parts of the coast, including numerous buildings in other cities and a large amount of bridge work, some of which is already coming up. San Francisco will, on completion of the projects now in hand, be well provided with business and office buildings of the larger class, and less activity is expected in that line until the population of the city shows a material growth. Most of the work now in prospect is on hotel and apartment buildings within the fire limits, many of which require a fair tonnage of structural steel. Among the contracts to come up soon are the Pacific Union Club, about 200 tons; the Knights of Pythias Building, 160 tons, and the Bohemian Club Building. Arrangements are now being made for a large State armory building. The Bankers' Hotel in Oakland has not been let, and nothing has recently been heard of the St. Francis Hotel annex. One of the large Eastern fabricators has taken a larger tonnage in this market than for some time, but most of the work offered here is unattractive to Eastern interests, either on account of the comparatively low prices prevailing here or the nature of the work. The largest local shop, which has been out of the market for some time, is again taking contracts, but has so far been very busy on old work. The smaller fabricators are handling a larger tonnage than usual, some of them working at full capacity. Representatives of the principal rolling interests report a continued heavy demand for the raw material from Pacific Coast fabricators, who find some difficulty in getting quick deliveries.

Pig Iron.—The movement of pig iron in this market is gradually becoming more general, though the larger importing interests regard the present activity as somewhat less than normal. Inquiries for foundry work are steadily increasing. The tonnage required for structural and ornamental work in this city is fully as large as during the summer months, while several of the foundries operating on machinery castings and the like are working at about full capacity. Several large contracts for the local fire protection system have been let to local firms, and the largest order in this connection is still to be placed. The melters are accordingly taking more interest in the market, and while they have not yet commenced to place large orders covering future requirements, the tonnage shows a material increase. Prices are, of course, governed more by foreign and Eastern conditions than by the local demand. There is a strong upward

tendency to values, and while there is still some uncertainty as to prices, No. 1 Chinese iron is moving at about \$26.50.

Cast Iron Pipe.—The market remains rather quiet all over the Pacific Coast, though there is a fair tonnage moving for various small projects in the interior and the northern coast States. New inquiries are coming up slowly, but no individual project is now in sight which will require any heavy tonnage. The United States Cast Iron Pipe & Foundry Company has taken an order for about 200 tons for the town of Monrovia, Cal. A small purchase has been made by the town of Hanford, Cal., and a lot of culvert pipe is to be purchased for Chico, Cal. A small purchase has been authorized by the city of Santa Cruz, which is developing plans for a long pipe line. The water company at Yuma, Ariz., will put in a lot of 12-in. pipe shortly. A number of improvements are being considered by Portland, Ore., and the city will receive bids November 1 for a large lot of gate valves, sleeves, &c. Several new mains have also been provided for at Tacoma, Wash. The Crane Company has taken a contract for a small tonnage of 4-in. pipe and calking material for Palo Alto, Cal. Prices on cast iron pipe delivered at Pacific Coast common points are quoted at \$37 per net ton for 4 to 6 in. and \$36 for over 6-in., with \$1 extra for gas pipe.

Merchant Pipe.—Local jobbing prices show an advance in response to the higher prices in the East and the market is in better condition than for some time. The movement in a jobbing way continues quite active, though the tonnage has increased very little since the close of summer. The movement from manufacturer to jobber, however, is somewhat larger, as the local merchants have been placing liberal orders to fill in their stocks. Notwithstanding the absence of the heavy individual orders from the oil interests which characterized the earlier months of summer, the tonnage booked for the oil fields, consisting mostly of large sizes, shows very little decrease. The oil industry is apparently developing in better shape than last year, as more capital is available for carrying out projects in the oil regions. Numerous orders for steel pipe are also being received in connection with water works enterprises.

Old Material.—This market is affected to some extent by Eastern conditions, but local activities also tend to bring about a stronger market in most lines of scrap. The heavy accumulations of steel and wrought iron scrap which had lain in this city since the fire have been nearly all moved off, several cargoes having been shipped to the Atlantic seaboard, while the remainder has been purchased by rolling interests in this vicinity. Cast iron scrap is in especially strong demand here, owing to the increasing foundry requirements, and several large transactions have been closed recently. A Los Angeles foundry has purchased 2800 tons of cast scrap in this city, and local interests have been taking nearly all that was offered. Wrought scrap is quoted at about \$15 per ton, heavy cast iron being very firm at \$18, as before. Light scrap is \$1 lower, but is now moving more freely. No additional lots of old material are being placed on the market and dealers expect to dispose of the remaining stocks at strong prices.

As a preliminary to laying the pipe for the San Francisco high pressure water system, members of the city's engineering force are making an extensive study of the action of electrolysis on such systems in other American cities and in Europe.

The city of Los Angeles has called for bids on 12,500 ft. of riveted sheet steel pipe, 36 in. in diameter, and 10,150 ft. of similar pipe 42 in. in diameter.

The Arthur Koppel Company has let contracts for the erection of a new warehouse building in San Francisco covering half a block of land on Mariposa street. This will be the company's main distributing point for the Pacific Coast business and a large stock will be carried.

Harron, Rickard & McCone now have one of the best equipped machinery stores in the country at their new building on Townsend street. The building is five stories high, with basement and mezzanine floor, giving space for a large stock, and a complete equipment for handling heavy machinery has been installed.

The Southern Pacific Company is preparing to order over 80 steel passenger coaches for the new electric lines in Alameda County, Cal.

St. Louis.

ST. LOUIS, October 18, 1909.

Fall business is in full swing and, with rare exceptions, the volume is fully equal to the average of prosperous seasons, while in instances it is greater than was anticipated. The principal basic iron industry is sold away ahead and the leading St. Louis steel casting company is receiving liberal orders from railroads. Complaints of car shortage are becoming more general and are bound to become practically universal when the movement of the corn crop is on in earnest. The building operations of this section are on a large scale and all manufacturers of material are doing a

heavy business with a gradual improvement in prices. Collections are good and bank clearings continue to show a gain on the corresponding week of 1908.

Coke.—Encouraged by an active demand, which appears to be gathering force from week to week, the leading brokers and agents have been instructed by the principal producing interests to advance prices for coke. In this market the demand is coming both from the smaller consumers for quick shipment and from the larger buyers who wish to contract for future delivery. There is also some demand from railroads. Business in 1910 coke is restricted by the absence of quotations for round lots for that delivery. The demand for foundry is more general than for smelter coke. We hear of a sale of 25 cars of foundry for prompt shipment at a fraction under \$3, the buyer having agreed to take the coke as fast as it can be shipped. We quote for 72-hour standard Connellsville foundry for prompt shipment, \$3; for balance of the year, \$3.25; for first half of 1910, \$3.25 to \$3.40 per net ton at oven.

Pig Iron.—Sales agencies intimate that there is an increasing difficulty in securing new business owing to their inability to respond with firm prices for round lots for shipment over the first half of 1910, for which shipment most of the inquiry is now being directed. An exception is noted in case of the leading interest in Southern iron and also with a large producer in the Birmingham District, who, it is reported, have been free sellers on the basis of \$15, Birmingham, for that delivery, while with other offices no contracts are being confirmed for shipment beyond the first quarter of 1910. Some shading of this figure is said to have been affirmed by parties holding certificates on condition of accepting the iron for shipment for as early delivery as practicable. While there are parties who look for an advance of at least 50c. per ton on Southern iron prior to New Year's, it is hardly probable until resale iron is off the market. We hear of an inquiry still pending from a local steel manufacturer for 10,000 tons of basic for shipment over first quarter, 1910, and the sale early last week of 5000 tons of basic to a steel company in this section. Another local steel casting company is in the market for 5000 tons of basic for shipment over the first quarter of 1910. Most of the offices state that their sales of No. 2 Southern foundry are lots of 100 to 300 tons for prompt and first quarter delivery. While No. 2 Southern foundry can be bought on the basis of \$15, Birmingham, for shipment over the first quarter of 1910, it is believed that the interests referred to have booked as much business as they are disposed to entertain and there are no offerings for shipment over the first half.

Lead, Spelter, Etc.—The market for lead is quiet at 4.25c., East St. Louis. Spelter is in large demand and firm at 6.12½c. Zinc ore is very firm at \$49 per ton, Joplin base, for 60 per cent. Tin is off 10c. per 100 lb.; antimony unchanged; copper, 10c. lower. The demand for finished metals for the week was excellent.

Old Materials.—There is a steady though not urgent demand for scrap iron and steel. Business in relaying rails is restricted by small stocks, and offerings by railroads are not looked for until spring; the inquiry, however, is limited. The scarcity of low grade pig iron aids in the sale of scrap iron. There is more demand coming from steel foundries than from rolling mills. A list of 700 tons of miscellaneous scrap was closed out last week by the Cotton Belt Railroad. It is a consumer's market, and prices, while unchanged, are ruling firm. We quote dealers' prices as follows, per gross ton, f.o.b. St. Louis:

Old iron rails.....	\$17.50 to \$18.00
Old steel rails, rerolling.....	16.50 to 17.00
Old steel rails, less than 3 ft.....	18.00 to 18.50
Relaying rails, standard sections, subject to inspection.....	25.00 to 25.50
Old car wheels.....	17.50 to 18.00
Heavy melting steel scrap.....	16.00 to 16.50
Frogs, switches and guards, cut apart.....	18.00 to 18.50

The following quotations are per net ton:

Iron fish plates.....	\$15.50 to \$16.00
Iron car axles.....	21.00 to 21.50
No. 1 railroad wrought.....	16.00 to 16.50
No. 2 railroad wrought.....	15.00 to 15.50
Railway springs.....	14.00 to 14.50
Locomotive tires, smooth.....	15.50 to 16.00
No. 1 dealers' forgs.....	11.50 to 12.00
Mixed borings.....	18.00 to 18.50
No. 1 boilers, cut to sheets and rings.....	11.50 to 12.00
No. 1 cast scrap.....	15.00 to 15.00
Stove plate and light cast scrap.....	10.75 to 11.25
Railroad malleable.....	14.00 to 14.50
Agricultural malleable.....	12.00 to 12.50
Pipes and flues.....	11.50 to 12.00
Railroad sheet and tank scrap.....	10.50 to 11.00
Railroad grate bars.....	11.50 to 12.00
Machine shop turnings.....	10.50 to 11.00

The report of the Illinois Central Railroad for the fiscal year just closed shows that improvements were made in the railroad proper and equipment aggregating \$1,435,275. Included in this account is nearly \$1,000,000, covering the purchase of a large area in the business section of New Orleans, on which it is proposed to erect warehouses and facilities necessary to the operation of an important freight terminal.

An association of St. Louis business men proposes to

raise a fund of \$500,000 to be devoted to inducing manufacturers to come to the city. Eight leading citizens have publicly pledged themselves to contribute \$10,000 each toward this fund, and steps are being taken to raise the balance in the near future.

Buffalo.

BUFFALO, N. Y., October 19, 1909.

Pig Iron.—The market, although somewhat quieter, continues very strong; the aggregate sales for the week have been fairly heavy, comprising one of 5000 and one of 2000 tons foundry grades, besides numerous smaller lots. Furnaces in this district are rapidly approaching a sold-up condition and the price situation is strengthening steadily. The demand for basic continues strong, with a limited supply. The principal local producer is arranging to increase its output by the erection of an additional furnace. One of the leading local furnaces, being heavily booked in general lines, announces that it is declining all business under \$18.50 for No. 1 X foundry and \$18 for No. 2, at furnace, for any delivery. The following schedule, however, closely represents quotations made by the other furnace interests for balance of year, f.o.b. Buffalo:

No. 1 X foundry.....	\$17.00 to \$17.50
No. 2 X foundry.....	16.75 to 17.25
No. 2 plain.....	16.50 to 17.00
No. 3 foundry.....	16.25 to 16.50
Gray forge.....	16.00 to 16.50
Malleable.....	17.50 to 18.00
Bessemer.....	17.00
Basic.....	17.25 to 18.25
Charcoal.....	20.00 to 21.00

Finished Iron and Steel.—The general run of business for all finished products continues good, and the demand for steel bars is heavily in excess of the mills' ability to furnish, most mills being booked to their full capacity for months ahead, and in many instances are obliged to decline extremely desirable offers of new business. In other lines of finished materials inquiries are coming in freely for deliveries over the balance of year and into next. The mills, however, are reluctant regarding the taking on of contracts for next year, although contract customers are commencing to press them urgently. The price of steel bars is still being held at 1.45c. to 1.50c., Pittsburgh, for immediate specification, and shipment at mills' convenience, although more is charged for small lots of less than carloads. Plates and shapes are held at 1.60c., Pittsburgh, for balance of the year, one interest asking 1.65c. to 1.70c. for preference deliveries through the first quarter. The local office of the leading interest reports export business to Canada on bar products, plates and structural extremely good at prices which are very firm with a tendency to advance. The scarcity of freight cars, which has been impending for some time, is now beginning to be felt quite acutely in some districts; hampering both the receipt of raw materials and shipment of finished products. The demand for fabricated steel continues good for building projects that are to be put through at once. Bids will be received this week for steel for the New York Central freight house extension at Buffalo, about 100 tons; for the International Acheson Graphite Company's factory addition at Niagara Falls, Ont., and for 450 tons of concrete reinforcing bars for additions to the plant of the Pierce-Arrow Motor Car Company, Buffalo. Bids will also be closed this week for the 2000 tons of concrete reinforcing bars specified for the new intake tube or pipe line, 20 ft. in diameter and about 1 mile in length, for the Ontario Power Company, Niagara Falls, Ont., leading from the gate house at Dufferin Islands to the power house in front of the Horseshoe Falls.

Old Material.—The market, while not as active as during the past few weeks, continues strong in all lines, and a large tonnage is being moved, as shipments on contracts and transactions recently made are going forward in large volume. There is no recession of values, prices being, if anything, somewhat stronger on the fair but comparatively smaller amount of new business transacted during the week. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$16.50 to \$17.00
Low phosphorus steel.....	21.00 to 21.50
No. 1 railroad wrought.....	17.50 to 18.25
No. 1 railroad and machinery cast scrap.....	16.50 to 17.00
Old steel axles.....	20.00 to 21.00
Old iron axles.....	25.00 to 25.50
Old car wheels.....	18.00 to 18.50
Railroad malleable.....	16.50 to 17.00
Boiler plate.....	14.50 to 15.00
Locomotive grate bars.....	12.50 to 13.00
Pipe.....	13.00 to 13.50
Wrought iron and soft steel turnings.....	11.75 to 12.25
Clean cast iron borings.....	10.00 to 10.50
No. 1 busheling scrap.....	14.00 to 14.50

Rogers, Brown & Co. have been appointed sole selling agents for the output of the Atikokan Iron Company, Ltd., Port Arthur, Ont., at the head of Lake Superior, producer of high grade strong low phosphorus foundry and malleable pig iron. The demand for Antikokan iron has been so great that the comparatively small output of the furnace, about 100 tons daily, has been unable to keep pace with it, the en-

fire product being sold for some time ahead. Very favorable water and rail rates have been established, via Port Stanley and Toronto, allowing of the economical distribution of the product throughout Ontario.

Philadelphia.

PHILADELPHIA, PA., October 19, 1909.

The market has been a trifle less active. A number of buyers are now pretty well covered as far as their immediate needs are concerned, and as sellers still show no disposition to book orders extensively for early 1910 delivery, there is a tendency toward quietness pending further developments. Foundry iron is being taken freely by the smaller buyers without much question of prices, which are a shade higher. In finished materials a good volume of miscellaneous business continues to be transacted at unchanged prices, with a disposition shown, in some instances, to accept moderate tonnages for early next year shipment. Coke appears to be steadily becoming scarcer, and higher prices are being asked for both furnace and foundry coke for next year's delivery. Very little prompt coke is available at the present range of prices. The increased activity on the part of the railroads is being taken with considerable encouragement; orders for additional rolling stock are coming out, and with the steady increase in freight traffic, which the railroads generally have experienced, a shortage in cars in the near future is freely predicted.

Pig Iron.—Somewhat less active conditions are noted, there being a slight lull in buying, particularly on the part of the larger consumers who have pretty generally made sufficient purchases to meet their requirements for the balance of the year. Foundry iron buying has been generally confined to the smaller melters, taking from carloads up to a few hundred tons, principally for this year's delivery. Where the larger lots are taken, however, deliveries frequently run beyond the year end. In some instances moderate lots have been sold for first quarter delivery, although sellers are not disposed to accept business for such delivery except at slightly higher figures than those at which business will be done for this year. The position of the furnaces in this territory is very strong. They practically all face higher costs of production, particularly fuel, which is \$1, and in some cases more per ton for next year's delivery than was paid for the same grades for last half shipment. Other costs, it is contended, also have a tendency to advance, and sellers are, therefore, going slowly before filling up order books for extended shipments at prices which may later prove to be unprofitable. It now appears that all the No. 2 X foundry iron of standard make, which was available at \$18.50, delivered, has been taken, and the minimum price for this grade, for shipment during the balance of the year, is now close to \$18.75; the majority of the sellers, however, find little difficulty in disposing of small lots of this grade at \$19, and in some cases \$19.50, delivered, has been realized. For strictly first quarter delivery the majority of sellers quote from \$19 to \$19.50, delivered, for No. 2 X foundry, with second quarter shipments, named by some makers, at \$20, delivered, although no business of the latter class has been transacted. Virginia foundry irons have not been active; several small sales are reported; but, outside of the leading interest, little iron for early delivery is available. Prices are firmly held at \$16 to \$16.50, at furnace, for Virginia No. 2 X, equal to \$19 to \$19.50, delivered, in this vicinity during the remainder of the year. Southern foundry iron is not being marketed in this territory, the trade not being interested at the present price levels, which are at least 50c. above those for the standard Northern brands. General inquiries for foundry irons are reported fairly good; the cast iron pipe foundries are in the market for low grade irons, which are scarce, while foundries in other branches of the trade are feeling the market in some directions. The consumption of foundry iron is reported to be increasing, and deliveries in nearly all cases are being freely taken. Forge iron shows some little movement, the principal transaction, some 2500 tons, on which deliveries begin at once, was done at \$16.75, furnace, equal to \$17.50, delivered here. Some sellers, however, hold their forge iron at a considerably higher figure. The only transaction reported in basic iron was a sale of 12,000 tons, for first quarter shipment, made at \$18.50, delivered. A belated transaction, made a little over a week ago, covering 5000 tons for first quarter delivery, also came out. The tonnage of basic for this year's delivery seems to be about cleaned up, unless makers' output should be greater than now anticipated, and no iron of this grade appears to be available at less than \$18.50, delivered, for either this year or first quarter of next year. Several sellers have, however, advanced their price of this grade for first quarter to \$19, delivered. The large tonnage of low phosphorus iron for delivery next year, which was reported last week, is still before the trade; further small inquiry is reported, and sales aggregating about 500 tons have been made for first quarter delivery at prices equal to \$22.50, delivered here. The general tone of the market is strong, the recently decreased buying being looked upon as a temporary lull. There seems to be a ten-

dency developing to again move prices upward, but all producers do not share in this opinion at the time. For delivery in buyers' yards, eastern Pennsylvania and nearby points, the following range of prices is named for shipment, for the most part, during the balance of this and the first quarter of next year:

Eastern Pennsylvania, No. 2 X foundry.	\$18.75 to \$19.50
Eastern Pennsylvania, No. 2 plain.	18.25 to 19.00
Virginia, No. 2 X foundry.	18.75 to 19.50
Virginia, No. 2 plain.	18.50 to 19.00
Gray forge.	17.50 to 17.75
Basic	18.50
Low phosphorus.	22.50

Ferromanganese.—A continuation of the recent rather quiet conditions is to be noted. No inquiries for any important tonnages have developed in this territory, and sales for outside delivery have been light. Quotations are still maintained at \$43 to \$44, Baltimore, for deliveries during the next six months, but in the absence of business are rather nominal.

Billets.—No very heavy tonnages have been placed during the week. Mills, however, are pretty well sold up as far as this year is concerned, and have not opened their books for strictly first quarter delivery. Prompt ordinary rolling steel is firm at \$28.60, delivered, with makers holding at about \$1 a ton advance for such business as runs beyond the year end. Forging steel is active, a good volume of business in small and moderate sized lots being transacted. Prices are strong at \$32 to \$33, at mill, for ordinary forging billets, special sizes and compositions commanding a sharp premium.

Plates.—A good tonnage of business is coming out. Individual orders, however, are not particularly large. Some mills have opened order books, in a moderate way, for first quarter, accepting business on a basis of 1.75c. to 1.80c., delivered, for ordinary plates, but still hold back when it comes to making contracts. For the general run of business for the remainder of the year 1.70c. to 1.75c. is about the ruling price. In a number of instances Eastern mills are running close to former record productions.

Structural Material.—Several small building propositions have come out, but heavy tonnages do not develop as rapidly as they did some months ago. Mills are very fully engaged, and any further rush of business would only complicate deliveries, which are now rather unsatisfactory on some classes of material. Makers still refuse to enter open orders, and, except in cases where specifications accompany orders, refuse, to a large extent, to consider business on which deliveries run beyond the year end. Prices on plain material are strong, miscellaneous business commanding from 1.70c. to 1.75c., delivered in this vicinity, according to specifications.

Sheets.—The demand continues active; orders are largely for reasonably early delivery, and Eastern mills are now shipping quite extensively in the Western territory, where mills are unable to make satisfactory deliveries. Order books are now pretty well filled for deliveries the balance of the year, but makers still refuse to accept business for next year. Prices are very firm, prompt or extended deliveries commanding a premium of \$1 to \$2 a ton, depending on circumstances; for delivery in the next 30 days, however, the following range of prices is quoted: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—While the volume of inquiries for refined iron bars is probably not so large, the tonnage called for fully makes up for any deficiency in numbers. The scarcity of steel bars for early delivery has resulted in an increased volume of business for the iron bar mills, a number of which are now fairly active. Steel bars are quoted at 1.65c., delivered here, but the majority of makers cannot make satisfactory deliveries. Refined iron bars show an upward movement, the range of prices under the circumstances being somewhat wider. For reasonably prompt shipment in this territory quotations for refined iron bars range from 1.60c. to 1.70c., delivered.

Coke.—The market appears to have settled at about \$3 per net ton, at oven, for standard brands of either furnace or foundry coke, for delivery during the first half of next year. Prompt coke is scarce, but some brands can be had at \$2.85 for this year. Buyers who have coke due them under low price contracts are experiencing difficulties in obtaining satisfactory shipments, and, in instances, have had to enter the market to make up deficiencies, both as to deliveries and quality. For this year's delivery, either foundry or furnace coke is quoted at \$2.85 to \$3 per net ton, at oven, while for next year's shipment \$3 to \$3.10 appear to be the prevailing quotations. For delivery in this territory, during the balance of the year, quotations range about as follows:

Connellsville furnace coke.	\$5.00 to \$5.25
Foundry coke.	5.10 to 5.25
Mountain furnace coke.	4.65 to 4.85
Foundry coke.	4.70 to 4.85

Old Material.—The market has drifted into a rather quiet state, rolling mill and machinery cast being the only grades in which any activity has been shown. The associated steel mills claim to be fully supplied with heavy melt-

ing steel and other grades of melting scrap, and, while picking up odd lots through their regular agent, are not buying heavily. The arrival of a cargo of English crop ends the first of the foreign purchases for the associated mills to reach this port, has been of considerable interest to the trade, owing to the possibility of a higher rate of duty being levied against a good portion of it. It is understood that the appraiser has recommended that the \$1 rate apply to the whole cargo, but the collector's decision has not yet been announced. The general tone of the market is strong, and the supply available, in some grades, is said to be limited. While there has been hardly enough business done in some grades to make a market, prices, while necessarily nominal to some extent, range about as follows for prompt deliveries in buyers' yards in this vicinity:

No. 1 steel scrap and crops.....	\$18.00 to \$18.50
Old steel rails, re-rolling.....	19.25 to 19.75
Low phosphorus.....	22.00 to 22.50
Old steel axles.....	23.50 to 24.50
Old iron axles.....	29.00 to 30.00
Old iron rails.....	21.00 to 22.00
Old car wheels.....	17.50 to 18.00
Choice No. 1 R. R. wrought.....	21.00 to 22.00
Machinery cast.....	17.00 to 18.00
Railroad malleable.....	17.00 to 17.50
Wrought iron pipe.....	17.50 to 18.00
No. 1 forge fire scrap.....	16.50 to 17.00
No. 2 light iron.....	10.00 to 10.50
Wrought turnings.....	15.75 to 16.25
Stove plate.....	14.00 to 15.00
Cast borings.....	13.50 to 14.00
Grate bars.....	14.50 to 15.00

Cleveland.

CLEVELAND, OHIO, October 19, 1909.

Iron Ore.—Severe storms on the lakes, which interfered with the movement of boats, and heavy snows in the mining districts, which put a temporary stop to work in many open pit properties and retarded shipments by rail from the mines, have caused a setback of practically a week in the movement of ore. Coming so late in the season, and at a time when strenuous efforts are being made to get down every ton of ore possible before the close of navigation, it will be impossible to make up for the time lost unless weather conditions are much more favorable than usual from now on till cold weather puts a stop to shipments. It is estimated that the shipments for the month will be 1,500,000 tons less than they would have been but for the storms. Ore men will attempt to make up some of the lost ground, and indications point to a very late closing of navigation. Prices at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; Old Range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—The center of interest now appears to be in basic iron, for which a number of inquiries have developed in the past few days. St. Louis consumers have inquiries out for 15,000 tons for first quarter delivery, but it is expected that these inquiries are preliminary to purchases of a much larger quantity. There are also a number of other inquiries for basic for both spot shipment and the first quarter. Basic appears to be firm, at \$17.50, Valley furnace, but several furnace interests expect a further advance and are not inclined to take on much at this price. Bessemer iron is firm, at \$19, at Valley furnace, for any delivery. We note a sale of 1500 tons at this price, for delivery in the next three weeks. An inquiry for 30,000 tons of Bessemer is still pending. The foundry iron market is quiet, the only sales reported being a few small lots for first half delivery. These sales were made by a local furnace at \$18, at furnace, for No. 2. Foundry iron is somewhat firmer in the Valley, where No. 2 is now quoted at \$17.50 for spot shipment and the balance of year, and \$17.50 to \$17.75 for the first half. Good shipping orders on contract indicate a heavy melt of foundry iron, but consumers are well covered with contracts and there is little demand for spot iron. Very little inquiry has developed recently for malleable iron, and only a small tonnage has been sold in this market for delivery after the first of the year. For the balance of the year we quote, delivered, Cleveland, as follows:

Bessemer	\$19.90
Northern foundry, No. 1.....	\$18.65 to 18.90
Northern foundry, No. 2.....	18.15 to 18.40
Northern foundry, No. 3.....	17.65 to 17.90
Southern foundry, No. 2.....	18.85 to 19.35
Gray forge.....	16.90 to 17.25
Jackson County Silvery, 8 per cent, silicon.....	20.55

Coke.—A very heavy tonnage was contracted for during the week by several northern Ohio and other furnace interests for their requirements next year. The contracts were made on a sliding scale basis. Prices on foundry coke are somewhat firmer. We quote standard Connellsville furnace coke at \$2.85 to \$3, per net ton, at oven, for spot shipment, and \$2.90 to \$3 on contract. Connellsville 72-hour foundry coke is held at \$3 to \$3.25 for spot shipment and the balance of the year, and \$3.25 to \$3.50 for the first half.

Finished Iron and Steel.—With tonnage on their books that cannot be gotten out until well along in the first quarter, mills are showing a stronger disposition not to make

contracts for delivery in 1910, and some of the local selling agencies that have been taking such contracts for steel bars, plates and structural material, have received instructions from their mills to make no more. The volume of specifications on orders continues heavy, and considerable tonnage of new business in small lots is coming out, for which high prices are being paid, the premium depending largely on the promptness of delivery. Steel bar deliveries have grown worse, and the securing of material needed at once has become a serious problem to consumers. There is also a pronounced scarcity of structural material, consumers being unable to secure all the sizes they want from local warehouses. A local bar iron mill recently secured 500 tons of billets, which have been rolled into steel bars, the bulk of which were quickly sold at 1.70c. As a result of the present scarcity of material for immediate shipment, the leading interest has taken some orders, mostly for structural material, for shipment from Chicago warehouse, at 1.80c., Chicago, for steel bars, and 1.90c., Chicago, for plates and shapes. Little new structural work is coming out, and it is expected that the situation in this branch will be relieved somewhat in the next few weeks. The scarcity of twisted bars is being seriously felt by contractors. The twisting capacity of the mills is inadequate, and buyers are offering to twist the bars themselves if the mills will furnish the plain bars. The demand for iron bars is fairly good, and prices are firm at 1.55c. to 1.60c., Cleveland. The Republic Iron & Steel Company started up its Toledo bar iron mill October 18, and is quoting bar iron at 1.50c., for shipment from that point. Local shipbuilders are figuring on inquiries for three or four new lake boats. The demand for sheets continues active, and some contracts for the first quarter are being made at a premium of \$2 to \$3 over present prices. Sheet mills are crowded and deliveries are slow. The demand for forging billets in carloads continues active, and some contracts have been made for delivery in three or four months at \$32, at mill. There is a good demand for light rails from coal mining companies, and an industrial plant is in the market for 500 tons. Warehouse business is very heavy.

Old Material.—The market is less active than it has been for several weeks. Many consumers who have been buying in small quantities have accumulated large stocks, and while they have not ceased buying, they are not taking on so much as they have been. Dealers have not changed their stand on prices, and the market is very firm, with prices unchanged, with the exception of a 50c. per ton advance on busheling and railroad wrought. The Lake Shore Railroad closed October 18 on a list containing about its usual tonnage. Prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails.....	\$17.50 to \$18.00
Old iron rails.....	20.50 to 21.00
Steel car axles.....	20.50 to 21.00
Old car wheels.....	17.50 to 18.00
Heavy melting steel.....	17.00 to 17.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable.....	15.00 to 15.50
Railroad malleable.....	17.00 to 17.50
Light bundled sheet scrap.....	11.50 to 12.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$21.50 to \$22.00
Cast borings.....	8.75 to 9.00
Iron and steel turnings and drillings.....	10.50 to 10.75
Steel axle turnings.....	12.00 to 12.50
No. 1 busheling.....	14.50 to 15.00
No. 1 railroad wrought.....	17.00 to 17.25
No. 1 cast.....	15.00 to 15.50
Stove plate.....	12.50 to 13.00
Bundled tin scrap.....	11.00 to 11.50

Cincinnati.

CINCINNATI, OHIO, October 20, 1909.—(By Telegraph.)

A very satisfactory condition prevails in all iron and steel markets. In finished lines each day sees with the leading interests a restriction of delivery possibilities for remainder of the year, and a few announce themselves practically out of the market save for certain peremptory demands of large consumers. Coke continues strong. There is not the feverish condition in pig iron markets that existed 10 days ago, and buying is on a more sane basis, although prices continue firm. Tool manufacturing concerns are increasing their output and wherever possible making machines for the stock floor.

Pig Iron.—Although no very large tonnages have marked the transactions of the week, there has been a spirited buying of medium sized lots, all kinds of iron participating. Both Southern and Northern districts are credited with some resale lots at a shade below the furnace asking prices. In the South it is not apparent that any furnace interest is quoting lower than \$15, Birmingham, for No. 2 foundry for the remainder of the year and first quarter, although some \$14.50 iron continues in evidence. There appears to be a little difference in the asking prices of northern and southern Ohio irons in favor of the northern Ohio interests. The largest inquiry in the market to-day, aside from St. Louis territory, calls for 5000 to 15,000 tons of basic, a last week's inquiry said to be still pending. A Chicago territory consumer of basic, thought to have bought 5000 tons of Vir-

ginia iron, is reported to be seeking a like amount more for first quarter delivery. A manufacturer of automobiles in Michigan is inquiring for 1000 tons of high manganese iron for first quarter delivery. In low grades, which continue very scarce, a quoted price is scarcely obtainable on anything under No. 4 foundry, for which a leading interest is asking \$14, Birmingham. Some recent sales of forge were made at \$13.75, which is about the best that can be done. Rockwood No. 2 furnace is due to go in blast about November 1, and some extensive repairs are, it is said, outlined for No. 1. Preparations are reported to be in progress for the starting up of the Edenborn Sheffield Furnace at Sheffield, Ala. High silicons seems to have settled at \$19 for 8 per cent. Jackson County furnace; \$20 for first and \$20.50 for second quarter. Prices on basic are not uniform nor openly quoted, conditions and delivery governing the price largely. Northern Ohio basic is quoted at \$17.50 to \$18, at furnace. Leading factors in the trade are inclined to think that there will be no appreciable advance on present quoted prices for some weeks. Iron in the Hanging Rock District is held rather firmly at \$17.50, Ironton, with offerings confined to a very limited number of furnace interests. Southern car wheel irons are a little stronger, and the minimum is about \$24.75, delivered, this territory. For prompt delivery and remainder of the year, based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry.....	\$18.75
Southern coke, No. 2 foundry.....	18.25
Southern coke, No. 3 foundry.....	17.75
Southern coke, No. 4 foundry.....	17.25
Southern coke, No. 1 soft.....	18.75
Southern coke, No. 2 soft.....	18.25
Southern gray forge.....	17.00
Southern mottled.....	16.75
Ohio silvery, 8 per cent, silicon.....	20.20
Lake Superior coke, No. 1.....	18.70
Lake Superior coke, No. 2.....	18.20
Lake Superior coke, No. 3.....	17.70
Standard Southern car wheel.....	\$24.75 to 25.25
Lake Superior car wheel.....	21.25 to 22.25

(By Mail.)

Coke.—The coke markets are firm and the advancing tendency is well marked; certain interests in the Connells-ville field asking \$3.50 for select foundry grades for early delivery. The shortage of labor is still a feature of the market and car shortage is manifested in the lack of box and stock cars and the substitution of rack cars which in the necessary hurry of present handling are not popular with consumers. Connellsville foundry coke is quotable at \$3 to \$3.40 per net ton at oven for spot, and \$3.25 to \$3.50 on contract business. Wise County grades are selling here at about \$2.35 for spot furnace and for forward delivery \$2.50 to \$2.75; foundry brands are quotable at \$2.75 to \$3 on spot business and on contract \$3 to \$3.25. Pocahontas spot furnace coke is quoted at \$2.35 to \$2.50 and for forward delivery \$2.50 to \$2.75. Comparatively little spot foundry coke is selling, as most concerns are well covered into next year. Some by-product coke manufactured in this territory is moving Westward, to be used by a furnace interest which is said to be short.

Structural Material.—All sales agencies handling structural material report this branch of the business as increasing, and on shapes and plates one of the leading interests is asking and getting 1.60c., Pittsburgh. The same interest is asking 1.50c. on bars and promising no earlier delivery than 60 to 90 days. Some good orders are being booked in railroad work and municipal and county bridges. A Columbus, Ohio, viaduct job recently placed calls for about 3000 tons.

Bars.—Steel bars are strong. Leading interests are getting 1.50c., Pittsburgh, although 1.45c. is probably still obtainable. Much of the present contracting on steel bars is for concrete construction, of which there is a tremendous lot outlined in this territory. The demand for iron bars is also good. The price here is about 1.65c. at local mill, but prices on bars, like other similar commodities just now, are largely regulated by specification and delivery wanted.

Sheets.—Reports from the office of the largest interest indicate that business in both sheets and tin plate is keeping up its remarkable record, and mills are getting further behind in deliveries. A large local interest is practically sold up for the balance of the year on black and galvanized sheets; and even on selected business deliveries are not promised earlier than four to six weeks. All such contracts are governed largely by conditions on which they are based as to price and delivery. Not infrequently a consumer needing the material badly pays \$3 to \$4 per ton advance over average market quotations without complaint. Roofing sheets are also in steady demand, and the price, like that governing sheets, largely a matter of conditions surrounding the order. The Pittsburgh price, namely, \$1.60 per square for painted and \$2.85 for galvanized 2½-in. corrugations, is used as a base by jobbers in making prices in small lots from store, marking up the usual advances for less than carload lots.

Old Material.—The market on scrap is firm, with some dealers steadily pushing the price upward. Melting steel is probably the strongest item, leading interests holding the

price at \$16.50 to \$17 per gross ton. There is a difference of opinion on borings and turnings, certain interests quoting \$8 to \$8.50 per net ton, while others are asking \$8.50 to \$9. Steel turnings are a little stronger, and are quotable at \$10 to \$10.50. No. 1 cast is not especially active, some dealers holding at \$16 to \$16.50, an advance of \$1 or more over last week. All dealers are maintaining immense stocks; one claiming to have 40,000 tons on local yards, with shipments steady on some large contracts made during the summer. A fair average of price maintained by leading dealers in this market, delivered in buyers' yards Cincinnati and southern Ohio, is as follows:

No. 1 R. R. wrought, net ton.....	\$15.00 to \$15.50
Cast borings, net ton.....	8.50 to 9.00
Heavy melting steel scrap, gross ton.....	16.00 to 17.00
Steel turnings, net ton.....	10.00 to 10.50
No. 1 cast scrap, net ton.....	15.00 to 16.00
Burnt scrap, net ton.....	10.50 to 11.00
Old iron axles, net ton.....	19.00 to 19.50
Old iron rails, gross ton.....	18.50 to 19.00
Old steel rails, short, gross ton.....	15.50 to 16.00
Old steel rails, long, gross ton.....	16.50 to 17.00
Relaying rails, 56 lb. and up, gross ton.....	22.50 to 23.00
Old car wheels, gross ton.....	15.50 to 16.00
Low phosphorus scrap, gross ton.....	18.00 to 19.00

Structural Plant Enlargements in the Chicago District.

CHICAGO, ILL., October 20, 1909.—(By Telegraph.)—The Illinois Steel Company has announced its intention to begin the erection at its South Works of an additional structural mill having an estimated capacity of 15,000 tons monthly. Upon completion of this mill the South Works will have the capacity for producing a total of 45,000 tons a month. Work is to begin at once and will be pushed vigorously with a view to the early completion of the mill to meet the rapidly increasing demand for structural steel in the markets of the Middle West.

Coincident with the announcement of the plans for this improvement, the American Bridge Company has signified its intention to start work immediately on a steel fabricating plant at Gary, Ind., designed for an initial capacity of 10,000 tons a month. The plans for this plant have been drawn with a view to future extension which will ultimately admit of the fabrication of 20,000 tons monthly. The first division of this plant will employ approximately 2000 men.

In the building of these works further evidence is afforded of the growing importance of the Chicago District as a distributing center for steel products of all kinds. The American Bridge Company engages in the fabrication of structural steel for buildings, railroad bridges and miscellaneous steel structures. The largest of the various plants operated by the company at the present time is in the Pittsburgh District, and the building of the proposed plant at Gary is for the purpose of enabling the company to supply from the Chicago District all of the demand for fabricated structural steel arising from Western territory, the same as it is now prepared to furnish from its large plant in the Pittsburgh District. Not of least importance is the fact that the large requirements for fabricated steel work in the city of Chicago will be met with new facilities for promptly supplying such needs. In keeping with the policy of the United States Steel Corporation, the Gary plant of the American Bridge Company will be of the most modern type in every respect.

James E. Bough has withdrawn from the firm of A. V. Kaiser & Co., Philadelphia, in which he had an interest and of which he was manager for the past 10 years. He has commenced business under the firm name of Pennsylvania Equipment Company, 1209 West End Trust Building, Philadelphia, and will deal in railroad and contractors' equipment; also machinery, new and second hand, of all kinds.

The production of pig iron in France in the first half of 1909 was 1,713,461 metric tons, or 33,173 tons less than in the first half of 1908. The district of Meurthe-et-Moselle led, with 68.5 per cent. of the output for the first six months of this year, as against 67.2 per cent. for the corresponding period in 1908.

Metal Market.

NEW YORK, October 20, 1909.

Copper.—While the talk of an impending announcement from large interests selling lake copper of a positive selling price which has been current in the trade during the last week is no idle gossip, those close to the parties in question are surprised over their inaction, and it is thought that the next few days will see a reduction in the asking price of lake copper. It is certain that consumers' stocks have run down and they will have to buy soon, but as they continue to take the position that the price now asked is too high, it is thought that their opinion will prevail. Such an announcement would undoubtedly bring about a buying movement, as some authorities estimate that consumers must be carrying at least 25,000,000 lb. less in stocks than they were on October 1. The fairly active demand for casting copper is taken as an indication that consumers' stocks are running low, and in some cases sales of this grade have been recorded at a price nearly equaling the selling price of lake copper, which at present is 13c. It is certain that casting copper cannot be had for much less than 12.80c. at present. The publication of European statistics of copper on October 15 did not cause much surprise. They showed that the visible supply amounted to 96,710 tons, which is an increase of 2860 tons from October 1. This is the largest supply of copper that has been in Europe in several years, but the figures should be taken as no criterion, as the consumption of copper has increased very materially there of late. Some newspaper talk is current of an amalgamation of large copper interests, and this is met with strenuous denials on the part of those concerned. Representatives of foreign houses who were asked by their connections abroad to look the matter up do not feel that there is any foundation in the report, which probably emanated from the fact that one of the leading copper interests has been practically out of the market for some time because it has been asking 13.25c. for lake copper, which is, of course, too high a figure. The exports of copper continue light as compared with the previous four months. So far this month 13,998 tons have been sent abroad. In London to-day spot copper was sold for £57 10s. and futures for £58 10s., and the market was steady. The New York market is quoted as follows: Lake, 13c.; electrolytic, 12.75c.

Pig Tin.—The sellers of pig tin are looking forward to an increased demand from the tin plate mills, and although the market is not particularly strong at present the trade is optimistic. The heavy production of tin plate will surely have its effect at an early day. Just now the demand is off all round. On October 13 there was a strong demand and sales of about 300 tons were recorded, which put the market up 10 points during the afternoon. There was an increased demand in the London market and on October 14 the market went from 13.25c. to 13.40c. The following day it went 15 points higher and this rapid advance frightened the buyers out of the market. It is apparent that buyers are timid, chiefly because of the large stocks on hand. Prices established during the week were as follows:

	Cents.
October 14.....	30.40
October 15.....	30.55
October 18.....	30.60
October 19.....	30.45

The prices early in the week were above the cost of import, and as the outside lots were well cleared up the London houses were let in the market to some extent, and did a little business which was notable considering that they have been doing practically nothing for some time since light transactions were made this afternoon at 30.40c. In London to-day spot tin sold for £138 5s. and futures for £139 15s. The sales were 160 tons of spot and 250 tons of futures.

Tin Plate.—It is evident that the production of tin plate this quarter will be larger than in any fourth quarter in several years, if not in any previous year, regardless of the fact that some mills have been idle. Some of the independent mills are booked up to April, and with inquiries coming in in large volume the situation is not a cheerful one as far as consumers are concerned. A further advance is predicted. At present sellers are asking for 100-lb. 1C coke plates \$3.74.

Lead.—Lead is firmer and there has been more buying. Outside lots have been cleaned up, and the general trade is asking the price established by the American Smelting & Refining Company which remains at 4.40c. The buying has been mostly in carload lots and no big sales were recorded. Inquiries show that the demand will continue for a time and it is thought that the price will be kept up. In St. Louis lead is selling for 4.25c. and there is no cutting in price.

Spelter.—Notwithstanding the fact that there is plenty of spelter on hand, a further advance has been made by the manufacturers and it appears that they control the situation. Spelter cannot be bought in any large quantities under 6.25c., New York, and 6.10c., St. Louis, while some manufacturers are demanding 2½c. per 100 lb. more than those figures in both markets. There is a good demand for

spelter from the galvanizing interests, and inquiries indicate that better buying is imminent.

Antimony.—The price of antimony has fallen off slightly, which is probably due to the published reports of heavy imports which show that during August 129 tons were brought in, making a total for the eight months of this year of 2914 tons. Hallett's can now be had for 8.25c. and Cookson's for 8.30c. Hungarian brands and other brands of antimony are bringing a little better price than they were. Some sellers are asking as high as 7.75c.

Iron and Industrial Stocks.

NEW YORK, October 20, 1909.

The stock market reversed its course, the industrial stocks showing marked strength and increasing transactions for the greater part of the week, under the impulse of the glowing reports coming from the various branches of trade. The advances in prices of some stocks have been striking. The range of prices on active iron and industrial stocks from Thursday of last week to Monday of this week was as follows:

Allis-Chalm., com..	14½-15½	Railway Spr., pref.	108-109
Allis-Chalm., pref.	51¼-53¾	Republic, com.....	45¼-47¾
Beth. Steel, com...	33¼-34¾	Republic, pref.....	105½-106½
Can, com.....	12¼-12½	South. I. & S., com.	19-19½
Can, pref.....	82¾-83	South. I. & S., pref.	50-51¼
Car & Fdry, com...	69¼-72	Sloss, com.....	91½-94
Car Fdry, pref...	118¼-118½	Sloss, pref.....	120
Steel Foundries...	60-61½	Pipe, com.....	31¼-32¾
Colorado Fuel....	44¼-45¼	Pipe, pref.....	85-85½
General Electric...	163-165	U. S. Steel, com....	87½-93¾
Gr. N. ore cert....	80¾-83	U. S. Steel, pref....	126½-128½
Int. Harv., com...	95-98	Westinghouse Elec.	85-86¼
Int. Harv., pref...	123¼-124¼	Va. I. C. & C.....	69-72¼
Int. Pump, com...	48¼-49¼	Chi. Pneu. Tool....	30¾-31
Int. Pump, pref...	89-90¼	Am. Ship, com....	67-67½
Locomotive, com...	58¼-60½	Am. Ship, pref....	110¼-111
Locomotive, pref...	115-116	Cambria Steel.....	46¾-47¾
Nat. En. & St., com.	20-21½	Lake Sup. Corp....	28¾-30
Nat. En. & St., pref.	97	Crucible St., com...	13¾-14½
Pressed St., com...	46-49	Crucible St., pref...	83-84¾
Pressed St., pref...	104¼-106½	Harb.-W. Ref., com.	29½-32
Railway Spr., com.	45¼-48		

Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common, 90, preferred 127½; bonds 105½; Car & Foundry common 70, preferred 118½; Locomotive common 58½, preferred 116; Steel Foundries, 60½; Colorado Fuel, 45½; Pressed Steel common 48, preferred 106½; Railway Spring common 46½; Republic common, 46½, preferred 105¼; Sloss-Sheffield common 92; Cast Iron Pipe common 32¾, preferred 85½; Can common 12¼, preferred 82½.

An issue of \$8,500,000 International Steam Pump Company 20-year first lien 5 per cent. gold bonds is being offered for subscription by William Salomon & Co., New York, and by a number of banking houses in Chicago, Philadelphia, St. Louis, Boston and other financial centers, including London and Amsterdam. The subscription price is 96½ and interest. The bids will be opened at 10 a.m. October 22. The proceeds of these bonds will furnish funds for plant extensions, will strengthen the working capital, and will refund the outstanding issue of \$3,500,000 6 per cent. debentures. After October 28 the new issue will constitute the only funded debt of the International Steam Pump Company.

Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall street, New York, furnish the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926.....	89	89½
Bethlehem Steel purchase money 6s, August, 1908.....	117	117½
Buffalo & Susquehanna Iron 1st 5s, June, 1932.....	99¼	100½
Buffalo & Susquehanna Iron deb. 5s, January, 1926.....	96	96½
Domillon Iron & Steel 5s, July, 1929.....	96	98
La Belle Iron 1st 6s, December, 1923.....	103¼	104½
Lackawanna Steel 1st 5s, April, 1923.....	98¾	98¾
Maryland Steel 1st 5s, February, 1922.....	101½	103¼
Pennsylvania Steel 1st 5s, November, 1917.....	101½	103¼
Pennsylvania & Maryland Steel 6s, September, 1925.....	109	110½
Republic Iron & Steel 1st 5s, October, 1934.....	101	101½
Sloss Iron & Steel 1st 6s, February, 1920.....	106¼	106½
Sloss Iron & Steel consol. 4½s, April, 1918.....	95¼	95½
Jones & Laughlin 1st 5s, May, 1938.....	101¼	102½

United States Steel Corporation.

Collateral Trust 5s, Series A, C, E, April, 1951.....	114¾	115¼
Collateral Trust 5s, Series B, D, F, April, 1951.....	114¾	115¼
Sinking Fund 5s, April, 1963.....	105¼	105½
Union Steel 1st 5s, December, 1952.....	105	106
Clairton Steel 5s, 1908-1913.....	100	100
St. Clair Furnace 1st 5s, 1910-1939.....	100	100
St. Clair Steel 1st 5s, 1908-1926.....	100	100
Illinois Steel deb. 5s, January, 1910.....	100	100
Illinois Steel 5s, April, 1913.....	100¼	100½

All bonds quoted "and interest."

Dividends.—The La Belle Iron Works, Steubenville, Ohio, has declared a quarterly dividend of 2 per cent., payable October 23.

The Pittsburgh Malleable Iron Company, Pittsburgh, has declared a quarterly dividend of 2½ per cent., payable October 20.

Attaining a speed of 31.85 knots, the torpedo boat destroyer, Reid, built by the Bath Iron Works, had a four-hour run off the coast of Maine October 9, com-

pleting her tests of speed and coal and water consumption and clinching her claim to the title of the fastest of American naval vessels.

New York.

NEW YORK, October 20, 1909.

Pig Iron.—Sales of foundry iron have been made to various interests in the past week, transactions of 500 tons being frequent, while sales aggregating 8000 to 10,000 tons have been made to pipe works. Inquiries from foundries connected with electrical, railroad and air brake interests involve a considerable tonnage. For the most part, the business now being booked is for delivery in the first and second quarters of 1910. Sales of basic iron were made at \$18.50 and \$18.75, delivered in eastern Pennsylvania, for the first quarter of 1910, but \$19 is now generally quoted. Importations of foreign pig iron seem less imminent. Only two cargoes having been bought thus far. We quote, New York, prices as follows: Northern No. 1 foundry, \$19 to \$19.50; No. 2 foundry, \$18.50 to \$19, and No. 2 plain, \$18 to \$18.50, for delivery in 1909. Alabama irons are quoted on the basis of \$19 to \$19.25 for No. 2 foundry.

Steel Rails.—The Winston-Salem South Bound Road has placed its order for 1910, which will be rolled in part at Pittsburgh and in part at an eastern Pennsylvania mill. The New York Central contract is still under consideration and is expected to be larger than for a number of years. Some of the mills from present indications will have only partial employment for the month of December.

Structural Material.—The steel for the Interborough Rapid Transit Company's elevated car yard at 240th street will be fabricated by the Pennsylvania Steel Company, and 3500 tons will be required. Bethlehem shapes will be used in the Wells-Fargo steel stables to be built in Jersey City and requiring 2000 tons. The contract for the latter was taken by the Metropolitan Bridge Company. For the Baldwin Locomotive Works erecting shop at Eddystone, Pa., about 800 tons, the fabricating will be done by Lewis F. Shoemaker & Co., Philadelphia. Work now being figured on does not include any large proposals, but most of the fabricating companies are filled up for some months ahead. The American Bridge Company expects to reach an output of about 55,000 tons this month, which will represent the highest for the year. This means a larger output per man than was possible in 1907, and this is the common experience of fabricating shops. We quote plain material at 1.66c. to 1.76c., tide-water delivery, mill shipments. Jobbers' stocks are being drawn upon steadily and from 1.90c. to 2.10c. is quoted on material cut to length.

Ferroalloys.—Some large sales of ferrosilicon have been made, and it is understood that the price obtained was \$63, New York. The market has stiffened somewhat as the result of further good sized inquiries. The demand for ferromanganese is quiet, but it is believed that there will be some large buying shortly, as certain heavy consumers are known to be in need of further supplies. The market is firm at \$44.

Bars.—The Eastern bar iron manufacturers are enjoying a strong market. The volume of business has been steadily increasing. More and more trade is being diverted from steel bars to iron bars. Quotations are firm at 1.65c. to 1.70c., tidewater, on bar iron. Steel bars continue to be quoted at 1.66c. to 1.71c., tidewater, but practically nothing is available at the lower price named. Bolts and nuts were advanced 5 per cent. on Tuesday.

Cast Iron Pipe.—The New York high pressure job let October 13 was awarded to a contractor, and it is understood that he has received prices from a Delaware River manufacturer, which are considerably under those named by other foundries. The general demand for small lots continues active, while rather more business is being entered for next year's delivery. The impression is making itself felt that those who place orders for pipe at this time will do considerably better than those who wait until toward spring or later. Carload lots of 6-in. are quoted at \$25 to \$25.50 per net ton at tidewater.

Old Material.—The market on heavy melting steel scrap is less active. The mills appear to be quite well supplied and are growing somewhat critical as to quality. The demand for rolling mill stock is fairly active, while the foundries are possibly the most persistent buyers in the entire trade. The advancing prices of pig iron naturally account for the greater interest shown by foundries in cast scrap. The demand for such low grade scrap as borings and castings also continues to be a marked feature, which is probably due to the desire of those who have purchased large quantities of high priced scrap to secure cheaper grades so as to reduce the cost of their mixtures. Quite a good deal of foreign scrap is now coming in. Almost every steamship from the tropics brings in good quantities of scrap, but this is seldom properly assorted, and must go to dealers' yards before being distributed among consumers. Heavy offerings of European steel scrap are being made. One firm has sought buyers for no less than 40,000 tons, but it is understood that the views

of foreign sellers are 50c. per ton or more above prevailing prices in eastern Pennsylvania. Quotations are as follows, per gross ton, New York and vicinity:

Rerolling rails.....	\$17.00 to \$18.00
Old girder and T rails for melting....	15.75 to 16.00
Heavy melting steel scrap.....	15.75 to 16.00
Relaying rails.....	22.50 to 23.00
Standard hammered iron car axles.....	24.50 to 25.00
Old steel car axles.....	21.50 to 22.00
No. 1 railroad wrought.....	18.50 to 19.00
Wrought iron track scrap.....	16.50 to 17.00
No. 1 yard wrought, long.....	16.50 to 17.00
No. 1 yard wrought, short.....	16.00 to 16.50
Light iron.....	11.00 to 11.50
Cast borings.....	10.50 to 11.00
Wrought turnings.....	12.50 to 13.00
Wrought pipe.....	14.75 to 15.25
Old car wheels.....	16.00 to 16.50
No. 1 heavy cast, broken up.....	15.00 to 15.50
Stove plate.....	13.00 to 13.50
Locomotive grate bars.....	13.00 to 13.50
Malleable cast.....	16.00 to 16.50

Nash, Isham & Co., 82-92 Beaver street, New York, have been appointed exclusive Eastern sales agents to represent the Southern Iron & Steel Company in this market on foundry pig iron and will handle the products of the Trussville and Chattanooga furnaces. The Trussville Furnace has recently gone in blast and Chattanooga will be in blast about November 1.

The United States Rail Company Succeeds the Maryland Rail Company.

The Maryland Rail Company, Cumberland, Md., having passed out of the hands of receivers, who were discharged by the court October 14, the reorganized company, the United States Rail Company, on the same day assumed charge of the property and equipment of the old concern. The Board of Directors is composed of George M. Shriver and J. D. McCubbin, Jr., of the Baltimore & Ohio Railroad Company; J. P. Kelly of the American Steel Company, Pittsburgh; Henry Shriver, Howard H. Dickey, Harry E. Weber and Thomas F. Shannon. The board elected Henry Shriver, chairman; H. H. Dickey, president; Harry E. Weber, first vice-president; W. Milnor Roberts, Jr., second vice-president; Thomas Shannon, secretary-treasurer.

Connections have been made for natural gas as fuel and other preparations were completed to start up promptly. The company manufactures from 8 to 40 lb. light steel rails, joints and spikes, and is prepared to quote prices for prompt delivery.

The Buffalo Manufacturers' Club Industrial Exposition.—The second annual Industrial Exposition, held in Buffalo, N. Y., October 6 to 16, under the auspices of the Manufacturers' Club of that city, proved to be an event worthy of the progressive spirit manifested by the club members in its inception and promotion, and a great success both in point of attendance and the scope of the exhibits shown by the local manufacturing industries. The attendance for the 10 days of the exposition was 124,000, including in addition to the local patronage visiting delegations from Cleveland, Rochester, Syracuse and other nearby cities and towns. The exhibits, covering all lines of local manufacture, occupied a space of over 50,000 square feet. The electrical display was a particularly striking feature and included in addition to the decorative illuminating effects in the exhibition hall a street illumination in decorative designs of colored electric lights, styled the "lane of light," extending a distance of six blocks along Broadway from the Sixty-fifth Regiment Armory, in which the exposition was held, to a triumphal arch at Lafayette square and Main street. It is the announced intention of the Manufacturers' Club to hold a similar industrial exposition annually, and steps may be taken to secure the erection of a large exhibition building to be used permanently for that purpose.

The LaBelle Iron Works, Steubenville, Ohio, has started up six hot mills in its sheet department and has plenty of the old men to operate the mills. Some time ago the sheet mill employees demanded that the company should sign the Amalgamated scale, which it refused to do and the sheet mills were shut down. The men are voluntarily returning to work, and it is expected that within a short time all of the mills will be in operation.

The Machinery Trade.

NEW YORK, October 20, 1909.

A gradual advancing of prices all along the line and a withdrawal of concessions heretofore exacted by buyers, together with a strong demand for machinery of all kinds, sums up the trade situation in this vicinity. The week was unmarked by the advent of any large lists, but the demand from all sources was good. The Norfolk & Western Railroad has come forward with a small list of tools, and other railroads, including the Pennsylvania Railroad and the New York Central, have been picking up machinery here and there to fill out shop requirements. The volume of inquiries is very good, and the percentage of business that results from them is decidedly higher than prevailed during the last few months. In other words, the inquiries which emanate from those who are curious to learn the state of trade rather than to purchase are comparatively few.

Orders have been coming in from the shipyards along both the Atlantic and Pacific coasts for machinery equipment to fill gaps in their shops or to replace wornout machinery. Manufacturers of power equipment are getting a large share of business, and they have been getting some good sized orders of late from cement plants in the Middle West. In that section the cement business has grown remarkably of late, and as the center of the cement industry heretofore has been in the Lehigh Valley, some of the best known experts in those lines are in this vicinity. Accordingly, engineers here have been doing most of the buying with the result that a good deal of the trade has come from that source. F. L. Smith & Co., 50 Church street, is one concern that has been making a specialty of cement mill construction work, and that company has been among the foremost buyers here of late.

The heavy demand for machine tool equipment and lack of ability in some cases to fill orders for new machines has turned the tide of trade once more toward the second-hand machinery dealers. During the business depression firms that made a specialty of dealing in second-hand machinery felt the lack of business to an unusual extent, as those who needed machinery equipment were able to secure new machines at very advantageous terms. This is not the case now, however, and in consequence the second-hand dealers are doing considerable business with those who are in a hurry to get equipment. Stocks have been depleted greatly, and the price of second-hand equipment of all kinds is noticeably higher than it was a year ago.

The Mechanical Device Company has been incorporated to continue the business of the present Glens Falls Mfg. Company, Glens Falls, N. Y., in the manufacture of motor boat devices and accessories and mechanical devices for automobiles and other power vehicles. The company is establishing a new factory at Watervliet, N. Y., and is in the market for lathes, drill presses, milling machines and other necessary tools for the manufacture of iron and bronze devices. The officers of the new company are: J. W. Walters, president; R. H. Davisson, vice-president, and L. L. Tripp, secretary and treasurer. The active control of the company will be in the hands of Mr. Walters and Mr. Tripp.

The Norfolk & Western Railroad has issued from Roanoke, Va., inquiries for a line of machine tools to be installed chiefly at Roanoke. The list includes one 20-in. lathe with 5-ft. swing, one 30-in. lathe with 5-ft. swing, two 24-in. shapers, one turret lathe, two twist drill grinders, one belt driven planer, one belt driven shaping machine, one heavy shaper, one radial drill press, one 90-in. wheel lathe, several presses, one pipe threading machine to do work up to 8 in., one 16-in. lathe, one bolt turning machine, one universal milling machine, several presses and other machine tools.

Some Big Power Projects.

The building of municipal power and lighting stations has been projected at Mankato, Minn.; Senola, Ga.; Brown's Valley, Minn.; Centerville, Tenn.; Hillsboro, Mo.; Gordon Heights, Del.; Clearwater, Minn.; McKinley, Minn.; Savannah, Mo.; Rockville, Md.; Hawkinsville, Ga.; Marion, Kan.

Construction of pumping plants for water works and sewage systems is being considered by Mattapoisett, Mass.; Holdingford, Minn.; Burnaby, B. C.; Aberdeen, Wash.; Coldwater, Ont.; Nelson, Neb.; Brainerd, Minn.; Waverly, Ohio; Waukonis, Okla.; Hennessey, Okla.; Woodburn, Ore.; Baker City, Ore.; Andover, N. J.; Centralia, Mo.; Dayton, Wyo.; North Yakima, Wash.; Leon, Iowa; Collinwood,

Ohio; Amarillo, Texas; Wheatland, Iowa; Lucas, Kan.; Akron, Ohio; Chickasha, Okla.; New Iberia, La.; Alpine, Texas; Sulphur Springs, Texas.

Electric railroads, the construction of which has been decided upon, or is proposed for the near future, are the Cincinnati, Louisville, Lexington & Maysville Traction Company, Lexington, Ky.; Kentucky Electric Railway Company, Earlinton, Ky.; Coal Creek Railway & Light Company, Coal Creek, Tenn.; Mid-Continent Traction & Power Company, Miami, Okla.; Indiana Northwestern Traction Company, Monticello, Ind.; Hampstead & Haverhill Electric Railroad, Manchester, N. H.; Murphysboro & Southern Illinois Railway Company, Murphysboro, Ill.; Postoria & Fremont Railway, Postoria, Ohio; Elgin, Woodstock & Lake Geneva Railway, Woodstock, Ill.; Washington Traction Company, Walla Walla, Wash.; Kankakee & Urban Traction Company, Kankakee, Ill.; Shawnee Electric Railway Company, Shawnee, Okla.; Mexico, Santa Fé & Perry Traction Company, Mexico, Mo.; Delphi, Flora & Burlington Railway, Delphi, Ind.; Galesburg, La Salle & Kankakee Railway, La Salle, Ill.; Waukegan, Rockford & Elgin Electric Railway, Chicago, Ill.; Valley Interurban Railroad, El Paso, Texas.

The McKinnon Chain Company, recently incorporated at Buffalo with a capital of \$1,000,000, to manufacture electrically welded chain by a new process, forming an extra strong lap weld, under the patents of Lachan E. McKinnon, has secured a site for its plant at Tonawanda, N. Y., just north of Buffalo. The site consists of 5½ acres on the Erie Canal, with switches from the New York Central and Erie railroads. Contracts have been let for construction of the main factory building, 80 x 304 ft., and power house, 30 x 40 ft., both of steel and concrete construction. A large amount of special machinery will be required. Lachan E. McKinnon, president of the McKinnon Dash Company and inventor of the process, is president of the new company.

The Cole Mfg. Company, Charlotte, N. C., has awarded contract for the erection of a foundry and five other buildings of brick and reinforced concrete construction to be equipped for the manufacture of farm implements. The machinery will be motor driven. A steam heating plant will be furnished by the American Machine & Mfg. Company.

The Southern Iron & Equipment Company, Atlanta, Ga., will erect a foundry for the manufacture of brass and iron castings to be operated in connection with the company's locomotive shop. E. P. Kern is president and general manager.

The Oklahoma City Portland Cement Company, Hartsborn, Okla., has decided upon the following machinery for the 1200-barrel mill which it will build: No. 8 gyratory rock breaker, elevator, screens, ball and tube mills (or ball-tube mills, i. e., combination machines), rotary kilns, coal crushers and pulverizers, coolers, packers, steam power plant, vertical tubular boilers, motors, clutches, shafting, &c.

The Atlantic City Electric Company, Arnold Building, Atlantic City, N. J., has not yet completed the plans for the new plant it is to erect, nor has any of the machinery been purchased. Later on it is thought that the company will come into the market for power equipment and accessories.

The Auto Car Equipment Company, Buffalo, N. Y., will erect a one and two story addition, 60 x 190 ft., to its plant at Elmwood and Hertel avenues and the Erie Railroad, which, with equipment, will cost \$35,000.

The New York Metal Products Company, 42 Spring street, Newark, N. J., has been buying considerable drop hammer equipment, to be installed in an existing plant at the Newark address. The company will manufacture electric specialties and a patent metal floor tread. Henry Short is the superintendent.

The George N. Pierce Company, manufacturer of the Pierce Arrow car, George K. Birge, president, 1695 Elmwood avenue, Buffalo, N. Y., will award contracts in a few days on two additional buildings, one four stories, 60 x 350 ft., and one four stories, 60 x 450 ft., to be used for the manufacture of model 1911 touring cars. Plans for the buildings were prepared by Lockwood, Green & Co. of Boston. J. W. Nichols, chief engineer of the Pierce Company, is now preparing specifications and a list of about \$200,000 worth of machine shop equipment and general machinery on which the company will invite bids within the next 10 days. All the machinery will be electrically driven, the larger machines by direct motor drive and the smaller machines by grouping from a line shaft. The buildings are to be of a design similar to the present plant and of steel and concrete construction.

Business Changes.

Joseph E. Paden and W. S. Paden have purchased 90 per cent. of the stock of the Northampton Emery Wheel Company of Leeds, Mass., and the company has been reorganized with Joseph E. Paden as president; W. S. Paden, general manager, and H. P. Otis, formerly treasurer of the company, as secretary and treasurer. The business will remain at its present location and will be conducted as before, with probable expansions.

Chicago Machinery Market.

CHICAGO, ILL., October 19, 1909.

As compared with the general recent average, trade in machine tools for the past week has been a little less active. Dealers are of the opinion that the inability of many factories to make anything like reasonable deliveries, especially on certain classes of tools, is to some extent responsible for the lessened interest manifested by buyers. On the other hand, it is noted that most of the deficiency observed is in the demand from automobile factories, a fact raising the suggestion that perhaps these interests have for the time being about completed their purchases of tool equipment. The lull, however, is as yet of too short duration to establish anything definite upon this point, and it may be merely a temporary pause preceding an even brisker movement. The later conjecture has some support in almost daily announcements of the organization of new companies formed for the purpose of building and equipping plants to manufacture automobiles or automobile parts and accessories. As long as this continues, and existing plants keep on expanding, it would seem that this field is destined to continue a prolific one for machine tool orders. As a matter of fact, the most serious problem confronting the trade is the difficulty of getting the machinery required. Even if there should be some decline in requirements of automobile builders, present indications are that such deficiency will be made up to a large extent by a growing demand for shop equipment from other sources. Industrial plants of various kinds are coming into the market more freely, and such orders are considerably more liberal than they have been for some time. A Milwaukee concern is figuring on machine tools amounting in all to about \$14,000, orders for which it is thought will be placed within a week or 10 days. Pickup orders for single tools of small lots are being placed with greater frequency by the railroads. Among the transactions of this nature last week was the sale of four boring mills made by a leading machinery interest. Orders for at least part of the tools included in the Allis-Chalmers inquiry recently referred to in these columns, have been placed. Just now the factory or dealer able to fill orders from stock or on short notice has a decided advantage, since in many cases the question of price is wholly secondary to that of delivery.

The Russel Motor Axle Company, Detroit, Mich., has been formed with a capital stock of \$100,000, to manufacture automobile axles and bevel gears. This company will be an adjunct of the Russel Wheel & Foundry Company which recently purchased the plant of the Wagner Machine Tool Company at North Detroit. The plant of the latter company, which is located on the Bay City division of the Michigan Central Railroad, will be operated by the axle company. A full assortment of modern high-class machinery suitable for the manufacture of axles and bevel gears will be required for the equipment of the works, which are expected to be ready to start before the end of the year. The yearly capacity of the plant will be 10,000 axles. The company is officered as follows: A. W. Russel, president; W. S. Russel, vice-president; Geo. B. Russel, secretary and treasurer.

A new plant for the manufacture of heavy sheet iron and light structural steel work is being erected by M. V. Cheesman & Co., Mishawaka, Ind. It will consist of five buildings, two of which are being erected and will probably be ready for occupancy by the first of the year. The remaining buildings will be put up next spring, and the plant will be equipped for the handling and fabrication of structural steel. Plans also include the erection of a foundry. The company is now in the market for rotary slitting shears, structural punches, angle rolls and other machinery necessary to equip a modern steel structural shop. Special attention will be given to the installation of the new tungsten lighting system, the company now having a contract for such a plant to be installed at Gary, Ind., also extensions to the present system at Mishawaka.

Figures are being taken by the Hicks Locomotive & Car Works, Chicago, on the following equipment for its plant at Chicago Heights: One 42 x 42 in. x 12 ft. heavy planer, belt driven, with one side head; one 15-in. crank slotting machine; one 2-in., or preferably 2½-in. turret lathe; one 36-in. back geared engine lathe, 10-ft. centers; one 60-in. boring and turning mill; one driving wheel lathe, 79-in. swing, equipped with journal turning attachment; one No. 2½ universal grinder; one horizontal punch, 12-in. throat, capacity 1½ in. through 1 in.; one combined punch and shear, 60-in throat, capacity 2 in. through 1½ in., shear capacity 2¾ in. round or 1¼ x 8 in. flats; crosscut shear to be furnished with regular equipment.

A new boiler shop 40 x 205 ft. is being built at Muskegon, Mich., by the North American Boiler Company, main office Fort Dearborn Building, Chicago, manufacturer of an improved standard safety boiler. The new plant will be of concrete and steel construction, and for its equipment there will be required a complete line of boiler making tools, in-

cluding rolls, punches, shears, hydraulic riveter, &c., none of which have as yet been purchased. The present facilities of the company are inadequate to meet the growing demand for its product which is extending to export trade. Orders for 2000-hp. have recently been entered for export to Cuba. Every effort is being made to have the new plant in operation as soon as possible.

The Wm. A. Salter Motor Company, Kansas City, Mo., is building a plant 50 x 140 ft. for the manufacture of automobiles under Wm. A. Salter's special designs and patents. It is the purpose of the company not simply to assemble but to build the car complete. The plant is being equipped with modern tools, including Shoemaker & Boye lathes, Brown & Sharpe millers, Steptoe shapers, and the usual assortment of small tools, all of which represent an investment of \$5000.

The reputation of Detroit, Mich., as an automobile center is being maintained by frequent new additions to this industry. One of the latest of these is the Sibley Motor Car Company, recently organized and incorporated to manufacture a popular priced touring car and roadster. The new company intends to erect and equip a plant, plans for which, however, have not yet been developed. The incorporators of the company are Frederic M. Sibley, Henry Wineman, Jr., John G. Utz and John B. Phillips, the last two named having been formerly connected with the Chalmers-Detroit Motor Company as chief engineer and superintendent respectively.

The entire stock and fixtures of the Scott Supply & Tool Company, Denver, Colo., have been purchased from the receiver by the Scott Supply & Machinery Company, which has consolidated the entire business in the large three-story building at 1725 to 1731 Blake street, heretofore occupied by the former company. In addition to the lines previously handled, mining and milling machinery, boilers, engines and heavy equipment are included.

The Engineering & Equipment Company, Aurora, Ind., has begun construction work upon an interurban electric road connecting Aurora and Rising Sun. Power house equipment, including generators, oil engines, etc., are to be purchased, also rails, cross ties and other roadway material.

Plans have been prepared by the Fairmont Creamery Company, Omaha, Neb., for the erection of a three-story and basement building 66 x 132 ft. at Twelfth and Jones streets. The equipment required will include a power plant, a 1000-ton ice plant and cold storage system. Owing to the lateness of the season the actual work of construction has been deferred until about July 1 next year.

The Merrill Iron Works, Merrill, Wis., has completed drawings for a concrete block foundry 40 x 60 ft., with steel truss and corrugated steel roofing. This building is being constructed to replace one recently destroyed by fire. For its equipment there will be required a crane and core oven.

The Clark Motor Car Company, Shelbyville, Ind., will purchase in the near future a complete line of power apparatus, machines and tools for the manufacture of automobiles.

Cincinnati Machinery Market.

CINCINNATI, OHIO, October 19, 1909.

In the machinery markets there is a steady improvement, both from the manufacturing and dealers' viewpoint. Some inquiry from Europe is noted by makers of lathes, grinders, boring mills and the standard tools, and in this connection local manufacturers of tools, who have brought out more new ideas in their respective lines since the first of the year than for any similar period in a long time, are looking forward to the visit of the commercial commissioners from Japan with considerable interest. It has been learned from correspondence that these gentlemen are noting particularly types of modern time and labor saving tools, with a view to introducing them into their manufacturing communities.

An improvement is noted in the demand for planers and the heavy types of tools, and some very good sales have been recorded through the dealers and some direct. Attention from the large manufacturers of power producing and other lines of machinery not made here, in the way of establishment of branch offices, is a source of satisfaction among local manufacturers. During the week the General Electric Company executed a lease for an entire floor and a half of the new Provident Savings Bank & Trust Building at Seventh and Vine streets.

On October 23 the Triumph Electric Company will formally dedicate the new plant at Oakley, and from 2 to 6 o'clock the officers and employees and friends will be engaged in a mutual felicitation over improved conditions generally. Only the tool department will be operated this week, but as rapidly as other departments can be added the entire plant will be put into operation, and the time calculated to do this is two weeks. The payroll at present will contain about 300 names, and the list will be enlarged as rapidly as conditions warrant.

The Cincinnati Industrial Bureau will present arguments

in favor of Cincinnati as a location for the contemplated new plant of the American Rolling Mill Company, which now has in operation mills in Middletown and Zanesville, Ohio. These were founded and are owned largely by Cincinnati capital, and the additional capital was also furnished and underwritten by Cincinnatians. Among the cities under consideration for the new location are Middletown, Hamilton, Zanesville, Cleveland, Ashtabula, Toledo and perhaps Cincinnati.

An encouraging sign in connection with the outlook for business in the tool lines is the reported plan for extensive additions to the Niles-Bement-Pond Company's plant at Hartford, Conn., which has just reached here. The capital of the Pratt & Whitney Company, which it controls, is to be increased by the addition of \$775,000 to the preferred and \$475,000 to the common stock, according to the report, which says further that the present preferred issue is to be supplanted by a new \$2,000,000 issue, to which present holders of preferred stock may subscribe at par and pay for with present shares, but the additional common is to be taken at par by the Niles-Bement-Pond Company, which now holds all the old common, amounting to \$7,525,000. It has been predicted that a combination of some very large tool manufacturing concerns in the Cincinnati District, along the same lines, is a possibility.

The Seneca Wire & Mfg. Company, Fostoria, Ohio, is reported to have closed a contract for a large amount of fine wire annually which will necessitate an immediate enlargement and improvement of the plant to take care of the additional output. It is calculated that the taking care of this increased output will add 33 1-3 per cent. to the capacity of the plant and that a number of fine wire making machines will have to be purchased.

The Owen Machine Tool Company, Springfield, Ohio, reports a gradually increasing business and the receipt of some good orders.

All jobbing foundries in the Central States are enjoying a steady run of business, some of them having increased the frequency and size of their melts to the capacity of their establishments. As a rule the tool making plants are ordering castings ahead, anticipating an increasingly heavy demand as the winter advances.

The Hooven-Owen-Rentschler Company, Hamilton, Ohio, is having a steadily increasing inquiry for heavy Corliss engines. On the 14th the foundry department turned out the largest casting ever made in that establishment. The piece weighed 80 tons, being an engine bed for a tandem compound Corliss engine. The total weight of the engine will be 400 tons and is being built for the Clairton Works of the Carnegie Steel Company, Clairton, Pa.

The Bahmann Iron Works Company, Cincinnati, has been incorporated by William Bahmann, E. J. Harth, Robert F. Bahmann, W. W. Cone, Jefferson Livingston, Frederick Holz, B. W. Campbell and F. Lawson Moores. The company will make sugar, coffee and rice machinery, designed especially for use in the Latin-American countries. Sugar and sorghum mills will also be built for the domestic trade. It is intended to erect a suitable plant and install machinery at the earliest possible date.

Milwaukee Machinery Market.

MILWAUKEE, WIS., October 19, 1909.

Trade in machine tools manufactured or assembled in the principal industrial centers of this section shows increased activity from one week to another, and it is interesting to note what a large variety of equipment is comprised in the standard lines now offered by Wisconsin firms. Among the more prominent of these are the milling machines of Kearney & Trecker and the Kemp Smith Mfg. Company, Milwaukee; punches and shears of the New Doty Mfg. Company, Badger State Machine Company and Rock River Machine Company, Janesville; horizontal drilling and boring machines of Pawling & Harnischfeger, Milwaukee; tool grinders of the Ransom Mfg. Company, Oshkosh, and El Star Mfg. Company, Milwaukee; boring mills and turret lathes of the Gisholt Machine Company and the Steidle Turret Machine Company (lathes only), Madison; die cutters, punches and presses of Logemann Bros. Company, Milwaukee; radial drills of the Optenberg Iron Works Company Sheboygan; pattern machinery of the Berlin Machine Company, Beloit, and E. B. Hayes Machine Company, Oshkosh; lathes of the Milwaukee Machine Tool Company and shapers of Lutter & Gies, Milwaukee. Report indicate that all of the companies mentioned are doing a good business, and their success is leading the way for products of other smaller concerns in the State. Successful business is also being done by manufacturers of power machinery, electrical apparatus, pumps, air compressors, blowers and other equipment for machine shops, foundries and mills, and the total of sales swells to a very large volume.

The lead and zinc district of Wisconsin is a field which

machinery men will find it profitable to cultivate from this time on, as the principal producing companies are making preparations for extensive improvements, with a view to heavy operations during the winter. Purchases will include boilers, pumps, engines, compressors, generators, motors, transformers, drills, machine tools for repair work, grinders, sharpeners and implements of all kinds used in mining. Hoists, skips, cars, tipples and light rails are also to be in demand. Not least of the manufacturers here and in adjoining States who have felt the recent influx of orders are those whose product is electric or hydraulically operated elevators. Construction of factory buildings shows an increasing tendency toward several stories, even in large metalworking plants, and elevators capable of bearing heavy weights are required to a much greater extent than heretofore. Another tendency visible through this section is the substitution of iron stanchions for both brick and wooden posts. While relatively a minor matter, the aggregate effect is to build up a new manufacturing industry in the metal consuming line.

Among the more important building operations in the State are those which Fairbanks, Morse & Co. have been planning for the extension of their machine shops at Beloit, Wis. Public reports, however, are said to be considerably at variance with the facts, and for authentic information the company should be directly addressed by those who are interested in the equipment of metalworking plants.

The plant of the Reickhoff Box Company will be removed from Duluth to South Superior, Wis., and some additional machinery will be installed, including possibly motors for operating the saws, planers, matchers, &c. A new boiler and engine house will be built.

The Milwaukee Car Mfg. Company has decided to proceed immediately with the building of an addition to its erecting shop which will give employment to 100 more men.

A hydroelectric plant, to develop between 700 and 1000 hp., will be built at Cooper Falls, Wis., by a company of which A. E. Appleyard, Ashland, Wis., is reported to be the head.

The Hadfield-Hall Company will engage in the manufacture of electrical apparatus at Wausau, Wis.

A new factory, with power plant, blower system, fire pumps, &c., is being planned for the Badger State Shoe Company, Madison, Wis.

According to the contract which has just been made by the Great Northern Railway with Schmidt Bros. & Hill, for rebuilding one of its docks at Superior, all the machinery is to be changed over to electric drive and control.

A steam turbine power plant, with rotary converter and transformer substations, will be built next spring by the Chicago & Wisconsin Valley Railroad Company if present plans are carried out, the probable location of the electric generating units being at Portage. E. G. Frost, Stevens Point, Wis., is president of the company.

Pitcher & Paulson, Sparta, Wis., are doubling the capacity of their factory and some additional power machinery may be required.

The Variable Speed Clutch Company, Milwaukee, has established a branch in Chicago at 67 West Washington street.

The Ajax Line Material Works have commenced operations at South Milwaukee as successor to a company of similar name in Chicago.

The Aluminum Foundry Company, Manitowoc, Wis., has let contracts for a foundry and power house, the latter to be equipped with gas engines, pumps and compressor.

The Sight Feed Oil Pump Company, Milwaukee, will in the future be represented in Cleveland by L. G. Finley & Co.

The Belle City Malleable Iron Company, Racine, Wis., has commenced work on foundations for a machine shop, pattern department, annealing room, &c., all of which will be under one roof, also power plant. An engine-driven dynamo of 200 kw. will be installed and motors for operating the machinery. Other requirements include new blowers for the furnaces.

Enlargements of its hydroelectric plant at Hatfield and the erection of another generating unit are contemplated by the La Crosse Water Power Company, La Crosse, Wis.

The hydraulic power development at Jim Falls, Wis., which was mentioned in this report some months ago as having been projected, will now be carried through under the direction of Jacobson & De Guerra, Grand Rapids, Wis., who are the engineers, and are to be addressed for machinery requirements, which will not be determined upon until later.

Tests have been made of a new gasoline traction engine designed and constructed by Geo. W. Morris, 1235 Main street, Racine, Wis., formerly superintendent of the Case Threshing Machine Works, which add to the convincing evidence already established of the practical adaptation of this form of motor power to tractor machines. In a severe test, covering trials lasting one week, the machine pulled eight 14-in. plows, cutting a furrow 6-in. deep without mishap or interruption. A larger machine of the same type now being built will have capacity for drawing 12 plows of the same size and will use either gasoline or kerosene for fuel. It

will also be fitted with appliances for pulling stumps and lifting and loading stones. The line will be completed by a general purpose farm tractor suitable for general farm and field and road work. The establishment of a factory for the manufacture of the engine is contemplated.

Cleveland Machinery Market.

CLEVELAND, OHIO, October 19, 1909.

Local machinery houses have received a fairly good volume of business during the past week, but orders have been small, mostly for one or two small or medium sized tools. Inquiries are quite plentiful, but, with the exception of one from the Wheeling & Lake Erie Railroad, they are all light. The market has broadened, however, and some business is now coming from almost every possible source. Many new small concerns in various metal working lines are being formed and others are planning additions to their plants, and considerable business is expected from these sources in the near future. The general feeling prevails that the coming year will be a very prosperous one and considerable business is expected during the next few months from industrial plants that will increase their capacity by the addition of some machine tool equipment. Many industrial plants are now running at their full capacity, with enough orders on hand to keep them busy for some time, and there are few that are not running at near their normal capacity.

Business is holding up well with the local machine tool builders, some of whom are so well filled up with orders that they can promise very few additional deliveries before the end of the year. The demand for heavy machinery for handling ore, coal, &c., shows a gradual improvement, and plants making this class of machinery have become quite busy. Orders and inquiries for equipment for steel plants are good. The demand for small electrical power equipment continues very active. Only a limited amount of business is coming now from the automobile plants in Ohio and Michigan, nearly all the automobile builders in this vicinity having purchased the additional equipment needed for making their next season's output, but orders for additional equipment continue to come from makers of automobile parts.

In the foundry trade conditions continue very satisfactory. Local foundries are well filled with work, especially those making light gray castings.

The Wheeling & Lake Erie Railroad has issued its list of machinery requirements for its new general locomotive and car repair shops at Brewster, Ohio, for which bids will be received October 26 by George L. Pollock, purchasing agent, Perry-Payne Building, Cleveland, as follows: One 18-in. four-spindle Lassiter straight and taper bolt turning machine, spindle with 18-in. feed, arranged for motor drive, together with equipment; one 66-in. vertical boring mill of extra heavy design, for wheel centers and general work, to be driven by a 35-hp., 385 to 1150 rev. per min. variable speed motor; one 6 ft. x 42 in. turret lathe, motor driven, with 220 D. C. motor; one locomotive cylinder shaping machine, with maximum stroke of 56-in., motor driven, with 10-hp., 220 volt motor; one hydraulic flanging press of the four-column type, having clear distance between columns of 8 ft. 1 in. x 12 in.; one two-spindle rod drill with bed 12 x 30 in., operated with 7½-hp., 220 volt D. C. 2 to 1 variable speed G. E. motor; one Wallace chaser grinder with high speed attachment; one bolt altering machine for locomotive work, with 24½-in. swing over bed; one 2-in. automatic pipe machine; one No. 3 combination cold saw cutting off machine; one 2-in. bolt pointing machine; one twist drill grinder; two vertical milling machines with spindle 5-in. in diameter and 22-in. vertical adjustment, operated by a 3 to 1 variable speed motor; one vertical milling machine with spindle 4½-in. in diameter, operated by a 10-hp. 10 to 1 variable speed motor; one Victor nut facing machine; one No. 16 plain gap grinding machine with automatic cross feed with 16-in. swing and 72-in. between centers; one single angle shear; one 100-ton horizontal bulldozer with 24-in. stroke; one special horizontal boring machine with 6-in. spindle, operated with a 10-hp. 3 to 1 variable speed G. E. motor; one four-spindle Lassiter or equivalent staybolt threading and reducing machine, arranged for motor drive; one 24-in. double head shaper; one hydraulic riveter; one No. 3 Brown & Sharpe or equivalent surface grinding machine, 36 x 14 x 11½ in.; one 16-in. double traveling head shaper with 16-in. stroke; one 2½-in. bar shear, guillotine type, motor driven; one rotary shear, to shear 1-in. plates, and 10-hp. constant speed motor; one 90-in. new model high powered driving wheel lathe, operated with a 50-hp. variable speed motor; one No. 4 single punch, to punch 1¼-in. hole; one 30 x 60 in. power forcing press, 50 tons capacity; one No. 4 universal high power milling machine, fitted with power feeds with longitudinal range of 35-in.; one Sellers No. 1 universal tool grinder; one 36-in. Bullard rapid production vertical turret lathe; one 60-in. semiuniversal radial

drill; one spruce cutter; one 50-in. Bement or equivalent special vertical drill; one horizontal boring machine with 3-in. spindle and 32-in. automatic feed.

The Ferro Machine & Foundry Company, Cleveland, maker of automobile parts and marine engines, has under construction one of the largest and most complete core rooms in the country. The building, which will be entirely occupied by that department, is 70 x 120 ft., three stories, and of brick and steel construction. The core makers will occupy the top floor, where one large core oven will be located. Room will be provided for 200 core makers. The second floor will be used for the pasters and assemblers of cores, and supplies will be kept on the first floor. An elevator will be installed to take the material to the upper floors. The entire contract for the erection and installation of the equipment has been placed with the J. D. Smith Foundry Supply Company, Cleveland. The Ferro Company has just completed its new machine shop, 140 x 160 ft., in which \$40,000 worth of new machinery has been installed. The company is also building a power and heating house in which two 250-hp. Erie boilers will be installed. Among other improvements that are being made is the installation of motor drives throughout the entire plant. The company is crowded with automobile work and is running its machine shop at full capacity, 24 hours per day. In marine engines the company is planning for an output next season 30 per cent. larger than this year.

The McAllister-Byrne Construction Company, Girard, Ohio, has been incorporated with a capitalization of \$20,000. It is announced that the new company will take over the plant of the Ohio Boiler Company in Girard, and will make additions and improvements. John H. Byrne will remain as manager.

The Mansfield Steel & Wire Company, Mansfield, Ohio, recently incorporated for the purpose of manufacturing automatic drive gates and lawn gates, has established a manufacturing plant in the building formerly occupied by the Mansfield Boiler & Tank Works. The company has elected the following officers: Huntington Brown, president; Arthur Hughes, vice-president; A. Kalmerten, general manager and secretary and treasurer, and M. A. Blackburn, superintendent.

The Buckeye Electric Company, Cleveland, has let contracts for the erection of a \$75,000 factory building at Hough avenue and East Forty-third street. It will be 122 x 265 ft., three and four stories high.

The Ohio Electric Car Company, recently organized in Toledo, has established a plant in the Milburn Wagon Company plant in that city.

The Ferro Machine & Foundry Company, Cleveland, Ohio, has just finished the construction of a large building containing a model machine shop, dining room for employees and a large stock room, and has now in course of construction a building to contain a core room, which will be completely equipped in every way with the latest modern labor-saving machinery, and will accommodate from 175 to 200 core makers. The company's business during the past month has been about 30 per cent. better than for the corresponding month last year; during this time it has shipped a large number of engines throughout the United States and Canada, and also to South America and other foreign countries. The rapid development of its business makes it necessary for the company to steadily enlarge its plant and it is therefore at all times in the market for a great many different types of machines.

New England Machinery Market.

BOSTON, MASS., October 19, 1909.

The chief topic of interest in the trade is the general decision on the part of the machine tool builders to defer advancing prices for the present. It had been confidently expected that the lathe builders would start the advance for the standard types of tools, following the interchange of views at the New York convention last week. A number of prominent houses favor an increase of 5 per cent., but as a majority seems to be against early action nothing has been done except in a few isolated cases. There is a strong feeling that as soon as manufacturers' stocks are exhausted and orders begin to exceed current production prices should be put up. Milling machines are already above the limit reached three years ago, and other announcements of advances from this branch of the trade would cause no surprise.

The local market retains much the same status which it has held since the warm weather. The International Steam Pump Company is contemplating important improvements at the George F. Blake Mfg. Company plant, at Cambridge, Mass., and at the Deane Steam Pump Company, at Holyoke, Mass., and inquiries are being made for some heavy machinery and a coal handling equipment for Cambridge.

The trade understands that other lists will be out later. Reports from Chicago, brought by visiting dealers, are that buying is extending beyond the automobile trade, the class of customers being more general. New England continues well behind the Middle West as a buyer, but the feeling is strong that signs point to a healthful improvement.

It is announced that the General Electric Company will make large additions to its plant at Lynn, Mass.

The Lakeside Forge & Wrench Company, manufacturer of drop forged wrenches and automobile and special forgings, has acquired the plant of the Springfield Drop Forge Company, Springfield, Mass., and has begun manufacturing with a full force. The Lakeside Company has also taken over the Federal Mfg. Company, Erie, Pa., manufacturer of toe calks. A new building is in process of construction at Erie, to be 75 x 285 ft. The present shop is 50 x 180 ft. The drop forging equipment of the works will be largely increased, and the business will be removed from Springfield about January 1. The president and general manager of the company is Eugene Childs, formerly of the Trimont Mfg. Company, Roxbury, Mass. Fred. E. Sands is the vice-president, Charles R. Dinkey treasurer and L. A. McBrier secretary and assistant general manager.

The manufacturers of special machinery have experienced so marked an improvement in business that some of them are suffering from a congestion of orders. There are cases where works are seriously tied up. The practice in this branch of the trade is to submit estimates on specifications submitted by customers. Until recently something like 10 or 15 per cent. of the estimates result in orders. To-day the acceptances by buyers run close to 80 per cent. So unexpected a change has brought confusion with it, as was inevitable because of the fact that these inquiries have been numerous of late. From present appearances users of special machinery will find it difficult to secure equipment excepting under the condition of deferred deliveries.

The controlling interest in the business of the Springfield Mfg. Company, Bridgeport, Conn., has been sold by George W. Jackman to H. F. Brandes, for many years superintendent of the Bullard Machine Tool Company of that city. Mr. Jackman retires from the concern. The Springfield Mfg. Company manufactures special grinding machinery and emery wheels. A new corporation is organizing under Connecticut laws, with the old name, the incorporators being H. F. Brandes, P. H. Brandes and Edward K. Nicholson, all of Bridgeport.

The Chase Rolling Mill Company, Waterbury, Conn., is to erect a new one-story building to be used in connection with other buildings for general uses.

The Coe-Stapley Mfg. Company, Bridgeport, Conn., has been organized to manufacture goods made of sheet metal and castings. The capital stock is \$50,000. The company has a Connecticut charter. B. L. Coe, Waterbury, is the president, William S. Stapley, Bridgeport, Conn., vice-president and general manager, B. S. Coe, New York, treasurer, and Ellery B. Shoemaker, Plainfield, secretary. The concern is composed of Waterbury, Bridgeport, New York, Brooklyn and New Jersey stockholders. The plant will be located in Bridgeport, in a building already erected, though the site is not yet decided upon. It is planned to begin manufacturing not later than November 15. At first 50 or 60 hands will be employed, and the number will be increased as the growth of business demands. B. L. Coe, the president, was for several years treasurer of the Bridgeport Brass Company and is treasurer and general manager of the Steele & Johnson Mfg. Company, Waterbury. He is a director of the Manufacturers' National Bank, Waterbury, and has been prominently identified with the manufacturing interests of Connecticut for 30 years. W. S. Stapley has been superintendent of the Bridgeport Brass Company for the past nine years and is the inventor of a number of appliances, including the Stapley pump, grease gun and gas burners. He has had long experience in the manufacture of sheet metal. B. S. Coe is the son of B. L. Coe, and has had charge of the New York office of the Bridgeport Brass Company for the last five years. He will have entire charge of the office work of the new company. E. B. Shoemaker has been connected with the New York office of the Bridgeport Brass Company as salesman for some years, and will have entire charge of the sales department. Most of the product of the company will be made on contract.

The Concord & Montreal Railroad, one of the constituent companies of the Boston & Maine Railroad, has voted to issue \$250,000 of new stock, the proceeds to be devoted to taking over water powers on the Pemigewasset River, in Franklin, N. H., and surrounding towns, and to meet the cost of the development of the properties. Electric generating plants will be established to furnish power for running the motive power and car shops at Concord, N. H., and the Concord & Manchester electric branch. The development is an important one, but details as to the amount of power to be produced are lacking.

J. H. Blaisdell, Times Building, New York, is looking over the field in Massachusetts with the purpose of establishing works for the manufacture of paper machinery. The

business will be operated by the Blaisdell Screwless Screen Company. The initial screwless screens have been built at the shops of R. E. Kidder, Worcester, Mass., and it is possible that the new shops will be located in that city. The company is considering the selection of a location in territory which has large paper mills.

The Standard Wash-Tray Works, New Haven, Conn., has purchased from Charles Swenson, the business of the Stamford Concrete Construction Company, formerly the Stamford Tub Company, Stamford, Conn. Most of the machinery and patterns have been removed to the Worcester street works at New Haven. The Standard Wash-Tray Works will soon proceed with the erection of its new factory, which will be located on Stiles street, New Haven.

The Royal Steam Heater Company, Gardner, Mass., is building an addition to its works.

The Bridgeport Hydraulic Company, Bridgeport, Conn., will erect a building, 30 x 60 ft., to be used for a chemical laboratory and machine shop.

Building projects in the industries outside of the metal lines include the following: Haverhill Boxboard Company, Haverhill, Mass., concrete and brick building, 74 x 200 ft., two stories; August Pritzlaff, Springfield, Mass., factory, 30 x 80 ft., three stories and basement; Fitchburg Paper Company, Fitchburg, Mass., paper mill.

A municipal committee recommends that the city of Marblehead, Mass., appropriate \$28,000 for improvements in its electric light and power plant, of which \$13,000 would be for new equipment.

The Safety Switch & Signal Company, 2 Rector street, New York, with factory at Saugatuck, Conn., has been incorporated with a Connecticut charter, with a capital stock of \$21,000. The company manufactures switches and signals for trolley roads. F. M. Raymond, Westport, Conn., is the president; M. E. T. Brown, Norwalk, Conn., treasurer, and J. W. Putnam, East Orange, N. J., secretary and general manager.

The Merrifield Building Trust, Worcester, Mass., which has large industrial buildings occupied by a large number of industries, will erect a new building 32 x 90 ft. and four stories, of reinforced concrete.

The new plant the Weidlich Bros. Company, New York, manufacturer of silver ware, is to erect in Bridgeport, Conn., will consist of a main building 46 x 155 ft., two stories and basement; power house 26 x 32 ft. and an office building 21 x 34 ft.

The Falls Company, Norwich, Conn., textile manufacturer, will build an electric generating plant near the plant of the Chelsea File Works in that city, to produce 200 hp., which will be transmitted over high tension wires to the company's mills.

The property of the Salem Electric Company, Salem, Mass., has been acquired by a syndicate headed by Charles H. Tenny, which already controls gas and electric companies in a number of New England cities, including Concord, N. H., and Haverhill, Malden, Melrose, Springfield and Fitchburg, Mass., and also at Oswego, N. Y.

The Automatic Machine Company, Bridgeport, Conn., will manufacture the product of the McNab Indicator Company, which has just been incorporated with Henry A. Bishop as president, W. E. Burnham vice-president, and Norman Leeds secretary and treasurer, all of Bridgeport.

Philadelphia Machinery Market.

PHILADELPHIA, PA., October 19, 1909.

From the dealers' standpoint the demand for machine tools has been rather quiet. Scattered sales have been the rule, and few orders for other than single tools are noted. Builders of the standard types of machine tools, however, have taken on a fair volume of business. No heavy individual orders have been booked, but an increased volume of business is reported in the great majority of instances. The bulk of the orders still originate in points outside of this district. Orders for several small shop equipments are reported, but these for the most part have been confined to the smaller standard tools. Inquiries have not been particularly numerous, being for the most part for single tools for extension or replacement. Several larger propositions, however, are in sight, one covering a moderate and another a somewhat more extensive equipment for proposed automobile manufacturing plants, the latter to be located in this city, the former up the State. The increased activity on the part of the railroads is taken as encouraging by the trade. The demand for rolling stock is increasing, and orders recently placed mean that a greater volume of business is being taken in all lines, both directly and indirectly, interested in railroad equipment. General industrial lines show steady betterment; locomotive builders are more actively engaged; agricultural implement makers are working at full capacity, and the outlook for an increased demand for machine tools in the near future is generally believed to be

favorable. Machine tool builders generally are more actively engaged. In some few instances, where tools are of a somewhat special nature, a decidedly better volume of orders has been taken, and plants are operated at a better capacity than ever before. In a number of instances tool manufacturers are steadily adding to their working forces and a scarcity of good mechanics is frequently reported. The foreign business shows no particular movement. A scattered demand for tools of a special character is reported, and builders take occasional orders, but the trade on the whole is unsatisfactory. Makers of specialties for export report unchanged conditions, the demand being irregular.

The second-hand machinery trade continues on a more or less irregular basis. The demand covers a wide range of tools, the better grades of standard tools selling readily. Second-hand boilers and engines continue dull, particularly engines for which the demand has been light. New engines and boilers have been in fairly good demand; several good propositions in equipment of a medium capacity are under negotiation, but close slowly, and engine builders are still operating considerably under the normal basis.

The foundry trade continues to increase in activity. The larger gray iron and steel casting plants are operating on a better basis, although but few are yet operating to full capacity. The outlook, however, is encouraging, although founders still report it difficult to obtain any better range of prices for work of a general character.

Wilson, Harris & Richards, architects and engineers, have completed plans for a five-story brick and reinforced concrete factory and storage house, 150 ft. square, for the Pratt & Whitney Company, to be erected in Hartford, Conn.

The Harlan & Hollingsworth Corporation is receiving bids for the erection of a concrete and steel building 173 x 300 ft., which it proposes to erect at Wilmington, Del.

The Seaboard Air Line has awarded contracts for 15 passenger and five switching engines to the Baldwin Works, and for 1000 box cars, 25 stock cars, and a 60-ton steam wrecking car to the Pressed Steel Car Company.

The Newton Machine Tool Works, Inc., reports a very satisfactory increase in the volume of business. It is operating its plant full time with about 75 per cent. of the forces used during the period of extreme activity in 1906-1907. The bulk of the orders taken has been for equipment of the medium and smaller types; cold saws for all classes of work, milling machines and slotting machines.

The Royersford Foundry & Machine Company, Royersford, Pa., reports a very substantial increase in business in its power equipment department, September being the best individual month in two years. In the punch and shear department business has not increased so rapidly, although inquiries are more numerous and a good number of orders are anticipated in the near future. From present indications the company believes that its plant will soon be operating at normal capacity.

The R. S. Newbold & Son Company, Norristown, Pa., has received an order for a pipe cutting off machine for export to Germany, also a considerable quantity of business from the National Tube Company for its new tube mill now under construction. Business with the Newbold Company has been increasing steadily during the past months, and in some departments sufficient work is on hand so that orders requiring delivery within six months can scarcely be taken care of.

The Southwark Foundry & Machine Works, Philadelphia, finds the demand somewhat stronger, although business of an important character closes up less satisfactorily, particularly during the last few weeks. A good demand for Weiss' condensers and general equipment of a medium class is reported, and a number of orders have been booked—not sufficient, however, as yet to place the plant on full capacity.

The Tindel-Morris Company, Eddystone, Pa., reports a considerable increase in its forging business, particularly for automobile work, although the demand for machine tools moves forward more slowly. Recent sales of cold saw cutting off machines include one to the American Pulley Company, Philadelphia, and one to the Baldwin Locomotive Works for its Eddystone plant. Inquiries for Tindel saw blades from railroad shops are numerous, and orders have been received for delivery to shops of the Pennsylvania Railroad for lines west of Pittsburgh; Canadian Northern Railroad, Winnipeg, Canada, and a duplicate order for a 52-in. inserted tooth saw from the Standard Forging Company, Indian Harbor, Ind.

Government Purchases.

WASHINGTON, D. C., October 19, 1909.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 26 for 11 sets of propelling machinery, screw and hydraulic jacks, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until November 2 for four ammunition hoist motors for the Mare Island Navy Yard.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until November 9 for

a tool grinding machine for the Puget Sound Navy Yard. Proposals will be received by the commanding officer of the Rock Island Arsenal, Ill., until October 25 for coal handling equipment for boiler house C of the arsenal.

Bids will be received until November 15 at the office of the United States Engineer, Cincinnati, Ohio, for operating machinery for dam 37, Ohio River.

The following bids were opened October 12 for machinery for the navy yards:

Class 71.—Two horizontal simplex hydraulic pressure pumps—Bidder 10, Blake & Knowles Steam Pump Works, New York, \$340; 18, Buffalo Steam Pump Company, Buffalo, N. Y., \$325; 25, Bethlehem Steel Company, South Bethlehem, Pa., \$1420; 43, M. T. Davidson Company, Brooklyn, N. Y., \$540; 109, Manning, Maxwell & Moore, New York, \$684; 120, National Electrical Supply Company, Washington, D. C., \$305; 162, Union Steam Pump Company, Battle Creek, Mich., \$290.50; 166, Vermilye & Power, New York, \$280 and \$675; 167, Watson-Stillman Company, New York, \$395; 169, Warren Steam Pump Company, Warren, Mass., \$361; 177, Henry R. Worthington, New York, \$345.

Class 72.—Two horizontal boiler feed pumps—Bidder 18, Buffalo Steam Pump Company, Buffalo, N. Y., \$1395; 46, D'Olier Engineering Company, Philadelphia, Pa., \$1547; 60, Fairbanks, Morse & Co., New York, \$1500; 73, Gardner Governor Company, Quincy, Ill., \$1050; 109, Manning, Maxwell & Moore, New York, \$2026.32; 120, National Electrical Supply Company, Washington, D. C., \$1522.50; 162, Union Steam Pump Company, Battle Creek, Mich., \$2237.50; 166, Vermilye & Power, New York, \$1979 and \$2175; 177, Henry R. Worthington, New York, \$1342.

Class 82.—Two direct current motors with one set of spare parts—Bidder 59, Fort Wayne Electric Works, Fort Wayne, Ind., \$709; 70, General Electric Company, Schenectady, N. Y., \$965; 151, Sprague Electric Company, New York, \$594; 154, B. F. Sturtevant Company, Hyde Park, Mass., \$616.

Class 83.—One back geared engine lathe—Bidder 30, Cambrone & Barclay Company, Charleston, S. C., \$2419.35; 61, Fairbanks Company, Torrington, Conn., \$2830; 86, I. H. Johnson, Jr., Company, Philadelphia, Pa., \$2259; 109, Manning, Maxwell & Moore, New York, \$2060 and \$2700; 127, Niles-Bement-Pond Company, New York, \$2344.

The following bids were opened on October 13, Circular No. 537 D, for two air compressors for the Isthmian Canal Commission:

Chicago Pneumatic Tool Company, Chicago, Ill., \$14,232; Ingersoll-Rand Company, New York, \$14,064 or \$16,582; Laidlaw-Dunn-Gordon Company, New York, \$13,150 or \$12,630; Platt Iron Works Company, Dayton, Ohio, \$15,200.

Customs Decisions.

Steel Points.

The Board of United States General Appraisers has decided a contention between the Government and Morris Goldberg regarding the classification of so-called steel points in favor of the importer. The articles were assessed for duty at 45 per cent. as metal goods not specially provided for under the Dingley tariff. The claim of the importer, that the points are dutiable at 2½ cents a pound under paragraph 161, as "other wrought iron or steel nails not specially provided for," is sustained.

Steel Tubing.

The Board sustained a claim filed by Hensel, Bruckmann & Lorbacher and other importers regarding the classification of tubing made of an inner steel tube covered with a braiding of woven iron wire. The collector exacted duty at 45 per cent. as manufactures of metal not specially provided for. According to the importers the merchandise is dutiable at only 35 per cent. as "iron or steel tubes." The question was whether tubing composed of both iron and steel is dutiable as tubing of iron or steel. This question the board decides in the affirmative. The protest is sustained accordingly and the lower duty granted.

Horace T. Potts & Co. Will Sell a Line of Swedish Tool Steel.—Horace T. Potts & Co., iron and steel merchants, Philadelphia, Pa., have been considering for some time the addition of tool steel to their already large line of iron and steel and allied products, and, accordingly, careful investigation of various foreign and domestic high speed and carbon tool steels has been made. Thomas C. Potts, a member of the firm, accompanied by C. A. Gridley, an expert on tool steels, visited recently a number of plants abroad, particularly that of Södersfors, Bruks Aktiebolag, Falun, Sweden, as a result of which Horace T. Potts & Co. have been appointed selling agents for the United States for the Rekord Superior high speed as well as the other high carbon and alloy steels made by the Swedish works named, which manufactures its products in all stages, including the mining of the ore. The Rekord Superior steel, it is claimed, compares very favorably with other highest grades of tool steel, and Potts & Co. will inaugurate an active selling and demonstrating campaign.

HARDWARE

There are no indications of a settlement of the question of Special Brands, notwithstanding its discussion pro and con by the parties in interest.

It is a case in which there is a conflict of interest, in which each manufacturer and jobber will have to act as may seem best to him.

It is very natural for the jobbers to cultivate the sale of brands of goods which they control, for in this they are following the example of the manufacturers, who endeavor to establish a reputation on their own brands.

It is to the interest of manufacturers to have their own brands known to the trade and the value of their trade-marks thus established.

It is, therefore, quite in accordance with the principles of trade that the manufacturers of specialties and of goods in which high quality is called for should be opposed to making their best goods under the special brands of the jobbers.

Such a practice, when carried by the manufacturers to any great extent, is throwing away the opportunity of having their products gain a reputation.

A good name on their trade-mark goods is more to be desired than a great business which contributes nothing to their standing in the market.

Just so far as the special brand business is carried does the advantage of controlling a trade-mark slip away from the manufacturer and remain with the jobber.

It is not strange, therefore, that the manufacturer opposes special brands, and the jobber favors them.

It is quite proper for jobbers to try to get manufacturers to make goods for them under their own private brands, but, at the same time, it is natural that the manufacturer should dislike this kind of business and should fight against it.

Manufacturers, if governed by ordinary human nature, are not likely to be as careful in making goods bearing jobbers' brands as in making their own brands.

The great majority of special brands are purchased at a lower price than the manufacturers' best goods, and are not understood by the purchasing jobber to be equal in quality to the manufacturers' best goods.

The making of special brand goods entails additional expense over the making of the manufacturers'

brands of the same quality, because they have to be carried through the factory in special and smaller lots.

On this account the special brand goods should cost the jobber and the retailer more than would the same quality of goods bearing the manufacturer's brand.

Some manufacturers, putting aside the natural desire to establish a reputation for their product under their own names, find it to their interest to make special brands and keep their factories running principally on such business.

In such cases, their greater output will perhaps make up for the failure to have their names stand for quality.

It doubtless pays some manufacturers to cultivate this class of business, as it helps them to keep the factory going and, presumably, yields profit.

Such manufacturers are apparently looking after their present advantage, with little regard for the future.

If the jobbers can get the manufacturers to make their private brands, they have a perfect right to do so, and no hard feelings should be entertained against them.

If manufacturers do not want this kind of business, it is their privilege to decline it.

The problem is made still more complicated by the difference of opinion among retail merchants as to the desirability, so far as they are concerned, of handling the jobbers' or the manufacturers' brands.

Forcible arguments can be put up on both sides of the question and the retailers are divided in their opinions and practice.

It seems as the result of inquiry and observation that small retailers who buy almost exclusively from the jobbers, or from one jobber, are more inclined than larger houses to carry special brands.

Large and progressive retailers using up-to-date methods are much more generally in favor of the manufacturers' brands.

If manufacturers find that they cannot distribute their own brands through the jobbers, it is up to them to canvass the question whether it will pay them to go directly to the retail trade or, in some cases, even to the consumers to find a market for their products.

Condition of Trade.

With the advance of the season there is progress toward an entirely normal business, with a tendency toward higher values. The upward movement in Iron is having its effect on goods, especially heavy goods in which the material is the major part of the cost. There is also a good deal going on in the way of revision of price schedules, resulting frequently in the withdrawal of special concessions, and not infrequently in the announcement of higher quotations. Advances are, however, being made conservatively. In some lines, owing to lively competition, prices are on a low level. On the whole the market has a strong and confident tone. Already something of a shortage is reported here and there. On certain lines merchants are not getting shipments as promptly as they desire, and are reminded of the days when one of the difficulties of trade was the delay in the execution of orders. This trouble is, however, experienced in only a few lines and the inconvenience is not serious. It is indeed rather enjoyed as a token of a return of healthful business conditions. Thus far manufacturers have had more trouble in securing material than merchants have in getting goods.

The volume of business is excellent, but some houses, both manufacturers and jobbers, have found October trade scarcely up to their expectations. With some manufacturers the volume of business is, on the other hand, large and in some cases record breaking. With others, owing to special conditions in the market affecting their particular lines, or to the management of things in their own plants, business is moderate and in some cases slightly disappointing.

The kind of goods which are conspicuous in the purchases of retail merchants are those which are called for to supply the fall and winter demand, and in these lines there is an active business doing. Builders' Hardware is in demand and Tools are selling well. The finer grades of Hardware and holiday goods are also moving more freely than used to be the case. This is principally in the way of preparation for the Christmas and New Year's trade, of which Hardware merchants are seeking to secure their share. It also results from the disposition on the part of progressive merchants to carry regularly the better grades of Hardware, Silver Ware and similar fancy goods which can appropriately have place in their stock. It is recognized that these articles belong in the Hardware store, and that in failing to handle them merchants are turning aside from opportunities to add to the attractiveness and profit of their business. The broadening out of the lines sold by Hardware merchants is one of the interesting and significant features of the trade.

Chicago.

Steady, conservative improvement continues to mark the course of demand in almost all lines of Hardware. It is worthy of note also that the movement is no longer subjected to unsteady spasmodic stops and starts, but is seemingly impelled by a firm, unshaken feeling of confidence, the effect of which is felt to a greater or less extent in all branches of trade and traffic. Examined in any light and from whatever point of view, it is difficult just now for even a confirmed pessimist to find any plausible grounds for a foreboding, gloomy forecast of commercial and industrial conditions. On the contrary, each week brings fresh evidence of thriving development in practically all lines intimately related to the Hardware trade. Indeed, it could hardly be otherwise with

the unabated activity observed in building construction, more general operation of foundries and other iron and steel working plants to full capacity, to say nothing of agricultural requirements, which cannot fail to be large. Price changes are not infrequent, the general trend being upward. At the same time the advances that have been and are being made are by no means radical or unreasonable. It is undoubtedly true that stress of competition in the past two years forced prices on not a few articles down to a point closely approximating the cost of manufacture. On such goods advances were of course imperative, but it is reassuring to note that in this respect the market is ruled by a spirit of moderation that offers no suggestion of an unstable boom in prices. Scarcely has the Hardware trade grasped the full import of opportunities offered in automobile goods as a new source of profit when still another industry is created which may in turn become a recognized factor in the trade, for airships, until recently regarded by the masses as typifying the impossible, have become a fact. This is emphasized in a commercial way by the announcement of a Chicago concern that in addition to machinery equipment, it carries airship supplies. So it would seem that before long calls for airship accessories and supplies will be too common to be regarded as a novelty.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—As winter approaches business continues to get heavier. The month of October started out with a rush, and has been going that way even since. We think it will be the best month we have had for two years. Sales and collections are both excellent. The prospects for continued heavy business throughout the winter and spring are certainly good.

Prices in all departments of the Hardware jobbing business are firm and advancing; in fact, it looks almost like we are going to have a runaway market. We are flooded with advances in every mail from the manufacturers.

If business continues to increase as rapidly as it has done in the past few weeks it is going to be more than the trade can handle this winter. There is already talk of shortages in factories and of car shortage with the railroads.

Jobbers are not stocked up heavily and retailers have been carrying light stocks, so they will very likely find themselves in a predicament, with a big demand for goods, broken stocks, and unable to get prompt deliveries.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—All of the instruments in the Hardware orchestra are playing but one tune at present—a grand volume of optimism, encouragement and belief in the expansion of business in all lines swell the song. The stock market has had its marvelous advances. Raw material has shared these later on—note billets at \$28—and now comes the varied finished product in its turn, as is always the case for the grand finale, with all the trombones and bass drums doing full duty. Never was there so much written of the why and wherefore as to what constitutes reasonable expectations in the way of increasing population and multiplied efficiency in new and untried channels, so that we are ready to believe almost anything if it is only asserted and asserted with sufficient emphasis and frequency.

People seem to have the wherewithal to supply their needs, but it develops that there are not enough desirable commodities to go around, whether it be the belt of the policeman or the flour ground out of the winter wheat or automobiles for the ambitious clerk. We are quite ready to believe Mr. Hill when he tells us that we shall before many years be importing instead of exporting breadstuffs. This sounds odd to us, accustomed as we have been to the assertion that the United States is more specially designed to feed the world. Whether there are more of us than there were a while back or whether we are bigger eaters than our thin, hatchet faced Puritan ancestors, it is hard to say, but we do become hungry

and somewhat apprehensive when hogs sell for a little over 8 cents on the hoof. We are pried with all kinds of statistics to prove that something is going to happen to give us a new sensation. We have passed from try squares to bi-planes, as it is. Our prophets spring from that class of newsboys who will sell us a 2 o'clock edition at high noon. We are anxious to have Congress predict a 9-ft. stage the year round in the Ohio River. What a great loon that would be to the whole West and South. The Ohio Valley Association has just had an enthusiastic convention in Cincinnati to that end.

Cleveland.

THE W. BINGHAM COMPANY.—Trade conditions in this section are about the same as noted in our former letter the first of the month.

The sudden change of weather from summer heat to winter winds has stimulated trade all over our country in winter goods. Oil Heating Stoves, Stove Pipe Elbows, Fire Shovels, Pokers, Dampers and other goods used mostly in cold weather are having their "innings."

Large quantities of Miners' Coal Shovels are being sold and used in the soft coal district now, as the immense tonnage of coal going to the Northwest before the close of navigation is stimulating coal miners in all section in Ohio and West Virginia to active work. The shortage among the manufacturers on many kinds of goods still continues.

Prices for the most part are even, no startling changes having taken place. However, the manufacturers announced last week an advance in the price of Mounted and Unmounted Grindstones, Wire Hoisting Rope, Sash Weights, Flat and Round Head Black and Tinned Rivets of all kinds, in bulk and papers, and Machinists' Ball Pein Hammers. Picks and Mattocks are a good purchase now at jobbers' prices.

We are looking for an advance very soon in the price of all kinds of Shovels and Spades, and believe at present prices they are a good purchase to carry over into the forepart of next year. We say this because we understand that several manufacturers have no overstock, jobbers are fairly well supplied now, but their stock is being daily depleted, and we believe it is good advice to get under cover.

Immense quantities of Carriage, Machine and other Bolts have been sold in the last 60 days; perhaps more so on account of the railroad companies and large manufacturing concerns whose stocks have been badly depleted, and are now stocking up again. The sale of Gas Mantles for natural and artificial gas has been exceedingly large in the last year on account of the great improvement in quality and low price in this line of goods.

The Lantern business this year has been unusually large on account of the low prices at which they have been marketed, also the "ginger" that has been put into the sale of them by the manufacturers and jobbers. There are a lot of customers who have not bought Lanterns as yet, and as we are coming into the short days of the year, Lanterns and Oil Lamps of all kinds will be used freely, and we are looking for a lot of duplicate business in this line of goods. Just think when the old style No. 0 Tubular Lanterns first came out (25 or 30 years ago) the merchant paid about \$12 a dozen for them and he retailed them at \$1.50 each. Then too, this was an old style hot blast Lantern. Now you can buy the Improved Cold Blast Lantern such as is made by three of the best manufacturers in the world at less than \$9 a dozen, so they can be retailed for \$1 each, and the same old Hot Blast Lantern that the merchant paid \$12 a dozen for he can buy now so he can retail them at 50 cents each and make a bigger percentage of profit than he did before.

Surely these are growing and progressive times that we are living in, and while we are taking into account and making so much fuss over what Christopher Columbus, Hendrick Hudson and Robert Fulton did hundreds of years ago, why not "pat ourselves on the back" with the idea that the present generation of Hardware merchants has done something for their country in the way

of evolution of business, prices and quality of goods. Business for the last quarter of this year looks good to us. From the reports we get from different sections of the country we think that we are going to enter the year 1910 with a lot of business cleaned up, and a lot more carried over into that year.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The business situation in this territory continues to improve, building up in a quiet way that gives every assurance of continued prosperity covering at least a period of another 12 months.

The past week has been notable for the annual gathering of Hardware merchants and manufacturers at Atlantic City, almost a suburb of Philadelphia, giving us the opportunity of acting in some measure as a host of the visiting thousand or more of the Hardware clan of this country and Canada.

If there remained any doubt that prosperous times had returned, it would have been dispelled by the few days spent at the meetings of the joint convention of the manufacturers and jobbers; and nothing was more marked than the contrast between this meeting and the last one held at Atlantic City in October, 1907. At that time, right in the midst of the meeting, announcement was made of the failure of the Knickerbocker Trust Company in New York, and the beginning of the storm was heard from other quarters. It was a fortunate circumstance that so many Hardware merchants and manufacturers were gathered at that time and could hear the wise counsel given them by Frank Baackes. To his strong words of counsel more than anything else we believe was due to the fact that a general slaughter in prices of Hardware was avoided. If the association have nothing else to their credit than this one incident there would be ample justification for continuing the yearly meeting.

The session just closed has been in all respects one of the most successful and enjoyable ever held, and the approval of Atlantic City as a place of meeting has been shown by the unanimous decision of both associations to hold their next joint convention at the same place next year.

Portland, Oregon.

FAILING-McCALMAN COMPANY.—Conditions in the Pacific Northwest continue good, with a prospect of becoming better. It is too soon yet to forecast the full effect of the Alaska-Yukon-Pacific Exposition on the Pacific Northwest, but even to-day we can see an enormous increase in our population, both real and prospective, which is entirely due to this fair. This is in addition to all the other influences which are tending to increase our resources. Our farmers and other producers out here are getting excellent prices for their products, and in some cases extremely high. This makes money even easier than usual here, and our collections are exceptionally good.

St. Louis.

NORVELL-SHAIPLEIGH HARDWARE COMPANY.—Business continues in good volume, showing increases over last year, but at the same time a conservative and careful buying spirit is in evidence among the retail merchants. A spell of snappy, cold weather would help start winter goods.

Interest centers in the Atlantic City meetings. Even manufacturers and jobbers who are not allied with either association show their interest in the proceedings by having representatives present as guests. The main subject discussed was that of special brands. It was admitted even by the manufacturers that there are "a few" first-class lines of goods put out by jobbers under special brands.

In our opinion, the work of the National Association could be made more effective by dividing it up under local chairmen or secretaries, to handle purely local issues, while the programme of the annual national meeting would be arranged by their chairmen to cover national problems. We believe the meetings should be carefully organized, so a strong programme would be carried

through, with forceful and interesting papers and talks. Dependence upon the inspiration of the moment is not always satisfactory. There are so many really strong men in the Steel and Hardware trade that good speakers—experts in their lines—should be more in evidence.

From all sides we hear of advancing prices and short stocks of raw material.

NOTES ON PRICES

Wire Nails.—New business received at the mills shows no falling off in volume, but rather an increase, which is an indication that low priced stocks in jobbers' hands are becoming depleted. Nearly six months have elapsed since the low prices, which were so attractive to buyers, were in force, and it appears as if jobbers still have on hand some of the Nails purchased at that time. The market is firmly maintained by mills at the following quotations, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.80
Carload lots to retail merchants.....	1.85
Less than carloads to jobbers.....	1.85
Less than carloads to retail merchants.....	1.95

New York.—Trade does not seem to have wholly recovered from the effects of the Hudson-Fulton celebration, as business has not yet resumed its expected activity. The reduction in the size of stocks of low-priced Nails has given the market a firmer tone, although some unevenness in prices is evident. The general quotation is, however, nearer to the base price of \$2 per keg for small lots at store.

Chicago.—At the rate shipments of specifications against old contracts are going forward from the mills, all of those placed prior to the last advance to \$1.80 will soon be completed. New orders are gradually increasing in volume, indicating that the large stocks accumulated through purchases made when prices were lower are being disposed of by jobbers. The possibility of a further advance is foreshadowed by rumors to the effect that such action is not unlikely to follow the rising tendency in steel. We quote as follows: \$1.98, Chicago, in carloads to jobbers, and \$2.03 in carloads to retailers, with an advance of 10 cents for less than carloads from mills.

Pittsburgh.—There is a fair amount of new buying in Wire Nails, but new demand at this time is not as active as expected. Many of the jobbers still have fairly large stocks of Nails on hand, mostly bought at the \$1.70 price, and which they are slowly working off. In some sections jobbers are quoting prices on Wire Nails which lead the mills to believe that these particular jobbers still have some \$1.60 Nails on hand, and are shading regular prices slightly in order to influence buying. Prices with the mills are absolutely firm, and there is an entire absence of any cutting. We quote Wire Nails at \$1.80, base, f.o.b. Pittsburgh, in carload and larger lots.

Cut Nails.—The market is showing increased firmness, and mills are apparently unwilling to quote lower than regular prices to secure business. One Western mill is reported as having booked orders sufficient to take its entire production for the next 60 days, and other mills are disposing of their output. Material entering into the manufacture of Nails is somewhat scarce, with higher prices in view. Cut Nails are quoted on the basis of \$1.80 to \$1.85 per keg in carload and larger lots, f.o.b. mill, with \$1.80 regarded as the minimum price with the majority of manufacturers.

New York.—Demand for threepenny fine Nails appears to be larger, in the local market, than for any other one size. Small lots of Cut Nails are held on the basis of \$2 per keg, at store.

Chicago.—The market is firmer and the demand for Cut Nails is fairly heavy. Jobbers are specifying more freely and new buying is more active so that the mills are better supplied with orders than they have been for some time. We quote in car lots to jobbers, Steel Cut Nails, \$1.98 to \$2.03; Iron Cut Nails, \$2.08 to \$2.13.

Pittsburgh.—The Cut Nail market is very firm, and

prices are ruling stronger than for some time. This is due to the fact that there is a scarcity in supply of Nail Slabs, and prices on these are steadily advancing. We understand some orders for Cut Nails placed some time ago for delivery prior to October 1, and which were not specified for, have been canceled by the mills. We quote Cut Nails at \$1.80 to \$1.85 base f.o.b., Pittsburgh, in carload and larger lots, and the lower price quoted is regarded as absolute minimum of the market.

Barb Wire.—A report which became current this week to the effect that there had been an advance of \$2 a ton in the price of Wire products is officially denied. The demand for Barb Wire shows some increase, which is expected to grow in volume as the season advances. The market is firm at the following quotations, f.o.b. Pittsburgh:

	Painted.	Gal.
Jobbers, carload lots.....	\$1.80	\$2.10
Retailers, carload lots.....	1.85	2.15
Retailers, less than carload lots.....	1.95	2.25

Chicago.—New demand is growing, as the heavy stocks purchased some time ago by jobbing trade are worked off. A fair amount of such business is being entered, but the mills are still occupied with the execution of unfilled contracts, which are now nearing completion. Indications point to the development of a reasonably satisfactory trade when the old orders are out of the way. We quote as follows: To jobbers, Chicago, carloads, Painted, \$1.98; Galvanized, \$2.28. To retailers, carloads, Painted, \$2.03; Galvanized, \$2.33; retailers, less than carloads, Painted, \$2.13; Galvanized, \$2.43. Staples, Bright, in carloads, to jobbers, \$1.98; Galvanized, \$2.28; carloads, to retailers, 5 cents extra, with an additional 10 cents for less than carloads.

Pittsburgh.—There has been some increase in new demand, and as soon as present contracts, taken at lower prices than are ruling now, have been cleaned up the mills expect a further increase in new business. The growing scarcity in supply of steel and the higher prices ruling are expected to result in another advance in prices of Wire products before very long, but nothing official on this has been given out. The leading mills are still disposed to enter orders for Wire Nails and Wire products in general at present prices for shipment within 60 days from date of order. The market is strong, and we quote Galvanized Barb Wire at \$2.10 and Painted at \$1.80 in carload and larger lots, f.o.b. Pittsburgh, subject to usual terms.

Fence Wire.—Contracts for future delivery are being booked by the mills in good volume, while manufacturers of Wire Fencing and other Wire goods are urging prompt shipment on contracts placed some time since. The market is firm at unchanged quotations, as follows: To jobbers in carload lots on a basis of \$1.60 for Plain and \$1.90 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.....	0 to 9	10	11	12	12½	13	14	15	16
Annealed.....	\$1.60	1.65	1.70	1.75	1.85	1.95	2.05	2.15	
Galvanized.....	1.90	1.95	2.00	2.05	2.15	2.25	2.35	2.75	

Chicago.—Manufacturers are very busy and are urgent in their demands for prompt shipment. Future requirements are being considered in new contracts of fairly liberal volume now being placed. Prices are firm and we quote as follows: Carloads, to jobbers, \$1.78, base, f.o.b. Chicago.

Pittsburgh.—Consumers who made contracts some time ago, when prices were lower than they are now, are urging the mills for prompt deliveries, and shipments by the mills are heavy. It is stated that some good-sized contracts for Fence Wire have been placed recently for delivery over the next two or three months. The tonnage on the books of the mills taken at lower prices has been pretty well cleaned up, and when this is entirely out of the way a material betterment in new demand is expected. The market is firm, and we continue to quote Galvanized at \$1.90, Plain at \$1.60 in carload and larger lots, f.o.b. Pittsburgh. Terms, 60 days or 2 per cent. off for cash in 10 days.

Carriage and Machine Bolts, Lag Screws, Etc.—

The manufacturers of Bolts, Lag and Coach Screws and the various other articles here enumerated, on October 19, advanced the line about 5 per cent., the details of which are here given. Many of the makers are far behind on orders and they are confronted not only with higher prices for material, but a scarcity of it as well. The revised quotations are as follows:

Common Carriage Bolts, $\frac{3}{8}$ x 6, smaller and shorter, cut thread	70 and $7\frac{1}{2}$ %
Common Carriage Bolts, $\frac{3}{8}$ x 6, smaller and shorter, rolled thread	70 and $12\frac{1}{2}$ %
Common Carriage Bolts, longer or larger than $\frac{3}{8}$ x 6 ..	.65 and 5 %
Machine Bolts, $\frac{3}{8}$ x 4, or shorter and smaller, with H. P. or C. P. Plain Nuts, cut thread	70 and $12\frac{1}{2}$ %
Machine Bolts, $\frac{3}{8}$ x 4, or shorter and smaller, rolled thread ..	75 %
Machine Bolts with H. P. or C. P. Plain Nuts, larger or longer than $\frac{3}{8}$ x 4 .....	.65 and 10 %
Machine Bolts, $\frac{3}{8}$ x 4, or shorter and smaller, with C. & T. Nuts	70 and $7\frac{1}{2}$ %
Machine Bolts, larger or longer than $\frac{3}{8}$ x 4, with C. & T. Nuts .....	.65 and 5 %
Machine Bolts, up to 6 in. in length, without Nuts, additional discount	10 %
Machine Bolts, above 6 in. in length, without Nuts, additional discount	5 %
Machine Bolt Blanks .....	.65 and 10 %
Bolt Ends, with H. P. or C. P. Plain Nuts .....	.65 and 10 %
Bolt Ends, with C. and T. Nuts .....	.65 and 5 %
G. P. Coach Screws .....	.75 and 5 %
Cone Point Lag Screws .....	.75 and 10 %
Forged Set Screws .....	.50 and 5 %
Tap Bolts .....	.50 %
Machine Bolts with semi-finished Nuts .....	.60 %

Rivets.—The manufacturers of bulk rivets on October 19, made the following prices, viz: Structural Rivets \$2.15, and Boiler Rivets \$2.25 per cwt., f.o.b. Pittsburgh.

Glass Cutting Wheels.—There have been advances effective October 9 on Black Craigleith Wheels for glass cutting of about 15 per cent. on thin stones, now 30 per cent. discount, and of about $7\frac{1}{2}$ per cent. on the thick stones to 25 per cent. off the list. These cutting Wheels are imported from Scotland and are used for the various kinds of glass cutting, such as bowls, vases, nappies, &c. They range in diameters from 2 to 30 in. rising by 2 in. in diameters. There is no change in the price of the white Craigleith quality, and the advance noted is caused mainly by the anticipated exhaustion of the black stones which are preferred for this class of work.

Machinists' Hammers.—The advance of 10 per cent. in the regular lines of Machinists' Hammers is represented by a discount on Ball Pein of 70 per cent. on fair orders. The Straight and Cross Pein Hammers may be quoted at 60 and 10 and 5 per cent. discount.

Wire Rope.—The manufacturers of Wire Rope have advanced the prices of Black or Plain Wire Rope $2\frac{1}{2}$ per cent., the schedule now being based on 55 per cent. discount to consumers, and on Galvanized Wire Rope $47\frac{1}{2}$ per cent., on which there is the same proportional increase. There is a small discount beyond this to jobbers. The terms are the same as heretofore, 60 days net, or 2 per cent. for cash in 10 days, and freight allowed.

Asbestos.—There continues to be a demoralized condition in Asbestos products, varying somewhat with the territory in which they are made. Low prices have been named down to \$35 per ton base on Asbestos Paper, and \$45 per ton base on Roll Board, although \$40 to \$50 per ton respectively is nearer normal. Sheet Mill Board 40 x 40 in. has been sold at \$2.38 per cwt., and Wick and Rope Packing in 500 lb. lots as low as 12 cents per lb., with an advance of 1 to 2 cents per lb. in smaller quantities. The quantity requirement in Packing, however, has come to mean little in the last two years owing to the comparatively slight difference between a few balls and 500 lb., which is insufficient to tempt buyers into taking more than actual requirements.

Pliers.—The new customs tariff recently enacted is causing some changes in sources of supply in certain classes of Pliers and Carpenters' Pincers, including Button Pliers, Heavy Cast Iron Pliers and some of the cheaper grades of foreign production which it is asserted, are now shut out of this market. In the Dingley bill the duty was 45 per cent. Now it is 40 per cent. ad valorem, but with a specific duty also of 8 cents per pound. Under

the old regime American makers could produce as cheaply as the foreigner, it is claimed by importers. The new schedules cause an advance of but 5 to 15 per cent., according to kinds on fine goods, but on the cheaper classes having more material and less labor the new prices, freight and duty paid, are prohibitive. For example, on a typical grade and style where the cost to the importer was \$2.20 per dozen, the American price is \$2.30 per dozen. Now the cost of the imported is \$3.07 as against \$2.30 on the domestic.

Express Wagons.—There are irregularities in the line of pressed steel Express Wagons for children, the demoralization, in part, being attributed to the practice some manufacturers have countenanced of marking them up a size for a series of given prices, which makes apparent rather than real differences. This method has been followed, it is asserted, in the interest of the department and similar stores. The market is still wide open and there is no association in this line.

Poultry Netting.—Some manufacturers of Poultry Netting have withdrawn one 5 per cent. discount on this line, making the price now to the Hardware trade 80 and 10 and 5 per cent. discount. If the price of Spelter continues to advance even higher prices will have to be made, it is claimed.

Nuts.—At a meeting of the manufacturers of Nuts in New York, October 20, the following advanced prices were adopted:

H. P. Nuts, square, blank or tapped	5.50 off list
H. P. Nuts, hexagon, blank or tapped	5.90 off list
C. P. plain square Nuts, blank or tapped	5.10 off list
C. P. plain hexagon Nuts, blank or tapped	5.70 off list
C. T. and R. square Nuts, blank or tapped	5.50 off list
C. T. and R. hexagon Nuts, blank or tapped	6.30 off list

The manufacturers refer to the demand as active and the market in excellent condition.

Window Glass.—The cold weather which has been quite general over the country has increased the demand for Glass to some extent, but buyers lack enthusiasm, and there is an absence of snap in the business. A meeting is scheduled for Wednesday and Thursday of this week, at which a report is expected from the committee appointed to look into the formation of the Imperial Window Glass Company. Manufacturers are still relying on the formation of this company, as productive capacity is in excess of the requirements of the country. During the fire of 1908-1909 there was complaint of the inferior Glass turned out by many of the factories aiming at quantity rather than quality. The complaints covered both machine and hand made Glass. This trouble, for which there may be a number of causes, including careless mixing, improper proportions, impure materials, &c., has not entirely disappeared, and merchants should be on the alert and refuse to accept Glass not up to the standard. In view of the uncertainty of the future course of the market, manufacturers' prices are not always uniform. A recent quotation on one or more cars of hand blown Glass was as follows, from list of January 1, 1901: First three brackets, single thick quality, 90 and 40 per cent. discount; all other sizes 90 and 30 and 5 per cent. discount; all sizes, double thick, B quality, 90 and 40 per cent. discount; all sizes, double thick, A quality, 90 and 35 and 5 per cent. discount. Some jobbers on the Pacific Coast are reported as quoting single strength from 90 and 20 to 90 and 40 per cent. discount; the latter price being regarded as a bottom figure. Prices recommended by the Eastern Window Glass Jobbers' Association, from jobbers' list, October 1, 1903 for territory east of the Allegheny Mountains, are as follows: New England States, from jobbers, Single, 90 and 30 per cent., and Double, 90 and 35 per cent.; New York State, Single, 90 and 30 per cent., and Double, 90 and 35 per cent.; New York State, factory shipments, Single, 90 and 40 per cent.; Double, 90 and 45 per cent.; in the Southern States discounts vary from 90 and 20 to 90 and 30 per cent. on Single and from 90 and 25 to 90 and 40 per cent. on Double. Under present market conditions these prices are not always strictly adhered to.

Rope.—Some improvement in business is shown by the more prompt acceptance of quotations in answer to inquiries, but the demand has not yet come up to the ex-

pectations of manufacturers. The manila fiber market is a little firmer, owing to a slight advance in price, but no change has taken place in Rope. The following quotations represent the market for moderate quantities: Pure Manila of the highest grade, 8 to $8\frac{1}{4}$ cents per pound; lower grades of Pure Manila, $\frac{1}{4}$ to $\frac{3}{4}$ cent less than the foregoing quotations. Pure Sisal of the highest grade, $7\frac{1}{2}$ to $7\frac{3}{4}$ cents per pound, base; Commercial grade, $6\frac{1}{4}$ to $6\frac{1}{2}$ cents per pound. Rove Jute Rope, $\frac{1}{4}$ in. and up, No. 1, is quoted at 5 to $5\frac{1}{2}$ cents per pound.

Linseed Oil.—Prices were advanced last week to the basis of 60 cents per gallon for Western Raw in lots of 5 bbls. or more. The situation regarding supply and demand is, if anything, more acute than last week. The Seed received at primary points is hardly sufficient to supply current demand, and prices are fluctuating to such an extent that crushers are unable to follow the market. They have not been able to accumulate either Seed or Oil and consequently are only able to deal the latter out to customers in comparatively small lots. Manufacturing consumers of Oil, as well as other buyers, are only ordering a sufficient quantity for nearby requirements, feeling assured that when the supply of Seed becomes larger prices will decline. Quotations are as follows: Raw Oil, 60 cents per gallon in lots of 5 bbls. or more; in less than 5-bbl. lots, 1 cent advance. Boiled Oil is 1 cent advance per gallon on Raw.

Spirits Turpentine.—The market has eased off during the week in sympathy with conditions in the South. The demand in this market has been confined to jobbing lots, as required for nearby needs. The New York market is represented by the following quotations: Oil Barrels, $59\frac{1}{2}$ to 60; Machine Barrels, 60 to $60\frac{1}{2}$ cents.

Pipe Cutters.—There has been a material advance in Pipe Cutters and those of leading makers are from 10 to 20 per cent. higher.

German Pattern Chain, Coil, Halter, &c.—Manufacturers of this line of goods have recently made an advance of about 10 per cent., and the market is referred to as in good condition, with an excellent demand.

Cost of Doing Business in the Implement and Vehicle Trade.

A MEETING of what is known as the Special Committee on Organization will be held in the office of the National Wagon Manufacturers' Association in Chicago on Thursday morning, 21st inst. This meeting is called for the purpose of preparing a report to the National Federation of Retail Implement and Vehicle Dealers' Associations, with which the committee will confer on the afternoon of the same day.

This special committee consists of the presidents and secretaries of the National Wagon Manufacturers' Association, Carriage Manufacturers' Association of America, Carriage Builders' National Association, National Plow Association, National Association of Agricultural Implement and Vehicle Manufacturers, National Federation of Retail Implement and Vehicle Dealers' Association and two delegates from each of the implement and vehicle clubs of Kansas City, St. Louis, Omaha, Minneapolis, Dallas, Oklahoma City, Des Moines and Peoria, E. W. McCullough, Chicago, secretary of the National Wagon Manufacturers' Association, being chairman.

The purpose of the creation of this committee was to present at the time of the fall meeting of the dealers' federation plans or suggestions for a permanent organization to promulgate in the implement and vehicle trade education along the lines of cost finding and accounting, particularly among retailers.

It is understood that many of the dealers' organizations have been doing good work in this direction and at most of the fall and winter conventions it is believed the topic will come up prominently for discussion.

G. H. DIRHOLD, formerly connected with the Simmons Hardware Company, St. Louis, Mo., has again affiliated himself with the company, in charge of the advertising department.

The Michigan Hardware Association's Advertising Contest.

ANNOUNCEMENT has been made by the Michigan Retail Hardware Association that \$60 in gold will be awarded during the next year for the eight best advertisements submitted by the members of the organization. The contest will be divided into four sections, a first prize of \$10 and a second prize of \$5 being awarded to members who submit the best retail Hardware advertisements for the present fall season, for the holiday season, and for the spring and summer periods of next year.

The fall contest will close on November 30, and advertisements intended to attract business during this season must be published in a newspaper by the above date.

Holiday advertisements must be published by January 30; announcements for spring by May 30 and for summer by July 31.

Contestants are required to send a marked copy of the paper in which their advertisement appears to Arthur J. Scott, secretary of the association, Marine City, Mich., and no advertisement will be considered unless it has appeared in a newspaper.

The location of the ad. in the paper may be taken into consideration by the judges, who will be disinterested advertising specialists whose personnel will be announced later. The judging and awarding of prizes will take place at the next convention of the association in Detroit in August, 1910.

Any merchant may submit as many advertisements as he desires, and there is no restriction placed upon entries, except that, as stated above, they must be sent in to the secretary as they appeared in the newspapers, showing by the date of the paper that they were published prior to the closing date for the contest in which they are entered.

This contest can be made unusually profitable to the members of the association, if they will co-operate and send in the results of their efforts, and it is possible that after the contest closes the best of the advertisements will be reproduced in book form, to be circulated among the members.

ABOUT three years ago the old established hardware house of Wells & Nellegar Company was succeeded by the McVoy-Wessling Hardware Company, organized as a wholesale hardware concern, which refitted and enlarged quarters then occupied at 72-76 East Lake street, Chicago. The business of the company in the meantime has grown to such an extent that larger space became an imperative necessity, and to provide it the property at Nos. 10, 12, 14 and 16 River street has been secured under a 12-years' lease. Better shipping facilities will be afforded at the new location, since the property will have a driveway into the building from the street and dock on the river for receiving and shipping freight. The company expects to take possession of the newly acquired property about January 1.

ON ACCOUNT of ill health F. E. Muzzy has resigned his position as vice-president and general manager of the Standard Arms Company, Wilmington, Del., the same to take effect November 1. In taking a respite from the cares of business and devoting himself to rest and recreation with a view to the recovery of his health, Mr. Muzzy will have the best wishes of a host of friends among the wholesale and retail trade of this country and Canada, among whom he is so well and favorably known.

THE Hardware store and business of J. L. Bassett, Coldwater, Mich., has been purchased by Henning & Wicker, dealers in General Hardware, Sporting Goods, Bicycles, Automobiles and Supplies. A. W. Henning of the firm formerly belonged to the firm of Nettleton & Co., which was succeeded by J. L. Bassett.

Metropolitan Hardware Company's Establishment

**Provision for Sampling and Stocking
Fishing Tackle and Brushes—
Gummed Label on Goods as a
Medium of Advertising—
Sales Stands outside the
Store dispose of
Lots of Goods.**

Second Article.

Accommodating and Displaying Fishing Tackle.

A large and varied line of fresh and salt water Fishing Tackle is carried, the stock being located between the two entrance doors. The goods in showcase, Fig. 17, are Reels, of which a large assortment is carried, adapted to requirements for various kinds of fishing. This stock



Fig. 17.—A Portion of the Department Devoted to Fresh and Salt Water Fishing Tackle, with Jointed Rods Showing Clearly Against Glass Store Front.

is supplemented by the Reels shown in Fig. 18, the show case being opposite the one illustrated in Fig. 17.

The duplicate stock is kept in original boxes on the narrow shelves below the case. The small drawers above the shelves are devoted to a large variety of sinkers.

The jointed fishing rods shown in Fig 17 are stood on back edge of the show case with a support for them to lean against about 30 in. higher up. With the light from

the windows in the front of the store as a background the Rods show off to good advantage.

Nets, Baskets and other articles of suitable size are hung between the windows and on rods. While any of the salesmen are expected to sell fishing tackle when called upon, the company employs one salesman who is especially versed in this line and is able to answer questions, and make suggestions to customers in regard to the kind of goods best suited to particular conditions.

On the front of the cash carrier gallery, Fig. 19, Rods, Lines, Baskets, Spears and Minnow Nets are sampled.

Metropolitan Hardware Co.
THE GREAT DOWNTOWN RETAIL STORE
32-34 VESEY ST. COR. CHURCH ST., NEW YORK.

Fig. 20.—Gummed Label, Shown Full Size, Which is Pasted on Each of the Larger Articles that Leave the Store.

This is on the west side of the store, which is devoted more particularly to Household Goods; so the samples inform customers buying in this department that these goods are included in the stock.

Gummed Label for Advertising the Business.

A gummed label, shown full size in Fig. 20, is printed in blue ink on white paper, and is pasted on each of the



Fig. 18.—Showcase of Reels, with Duplicate Stock in Original Boxes on Narrow Shelves Underneath and Small Drawers Holding Sinkers.

larger articles going out of the store, as an advertisement and a reminder of where the goods were purchased.

An Extensive Line of Brushes.

Below the gallery is the stock and samples of a large line of Brushes, as shown in Fig. 21. The drawers are 16 in. deep, and on the front of each is a sample of its contents. In card holder pulls are the name, description and number of the kind of Brush kept in each drawer. Prices are marked in pencil on the sides of the drawers. It is an easy matter for a customer to point out to a salesman the kind of Brushes he wants. This arrangement has been found much more convenient than having the samples in one place and the stock in another.

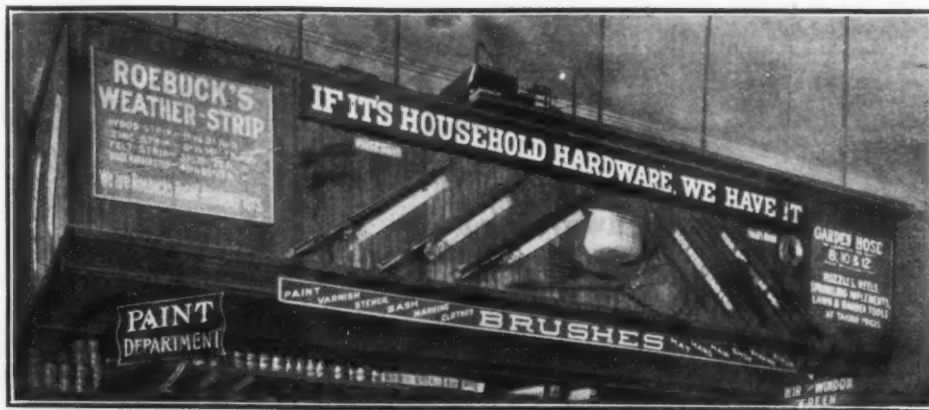


Fig. 19.—Samples on Front of Cash Carrier Gallery of Fishing Necessities and Signs Calling Attention to Different Lines of Goods.

Sales Stands Outside the Store.

An important feature of the business and a great source of revenue are the stands at the front and side of the store, facing the sidewalk, with slat awning above. The stands are about 80 ft. long, 40 ft. on each street, and 4½ ft. wide. Between the back of the stands and the store is a runway for the salesmen. On the stands are hundreds of trays, in which are the same quality of goods as are sold in the store. These are, for the most part, household necessities best adapted to the purpose as demonstrated by 30 years of experience. In addition

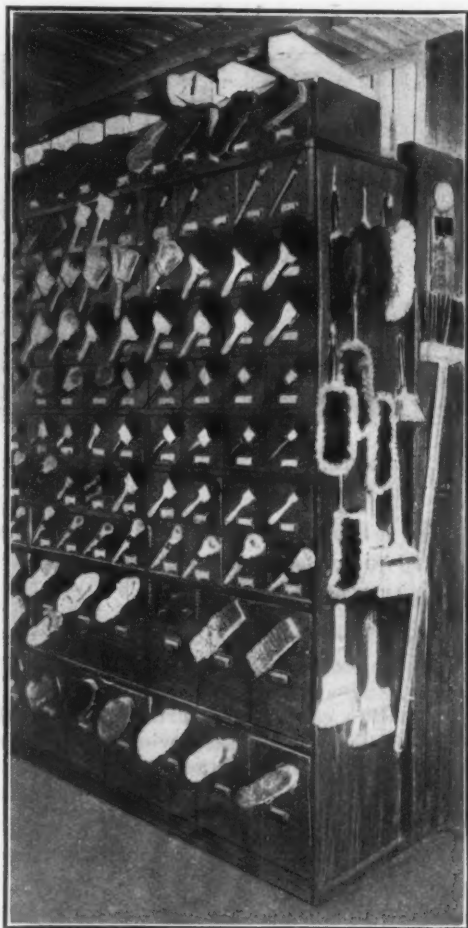


Fig. 21.—Brushes Sampled on Front of Drawers in Which Stock is Kept. Description of Each Sample is Given on Card Holder Pulls.

to this class of goods a specialty each week is made of one kind or several kinds of goods, occupying 8 to 12 trays, such as Pocket Cutlery, Kitchen Knives, &c. Fig. 22 gives an idea of the appearance and arrangement of the stands.

Demonstrations of new lines of goods are frequently



Fig. 22.—Eighty Feet of Sales Stands Outside the Store, Upon Which are Hundreds of Basket Trays Filled with Household Necessities.

given in the store by professional demonstrators with excellent results.

An illustrated description of the company's unique and attractive booth in the Hudson Terminal buildings will be given in our next issue.

The Buffum Tool Company's Catalogues

THE Buffum Tool Company, Louisiana, Mo., maker of Machinists' and Mechanics' Tools, has just issued two sections of its first general catalogue, which when completed will consist of nine separate divisions. Sections A and F are now ready for distribution. Section A, 52 pages, 7 x 10 in., illuminated paper covers, is comprised of price-lists, description and illustrations of a complete assortment of Cold Chisels of all kinds, Center Punches, Nail Sets, Scrapers, Combination Tool Rolls, Die Makers' Tongs, Engineers' Packing Tools, Boat Calking Irons, &c. Section F, same size, 24 pages, is devoted exclusively to Cement Tools, which include a variety of patterns for all sorts of service. Section H, Tinners' Hand Tools, is now in the press and will soon be issued. It will be followed by section B, Automobile Tools; section C, Bricklayers', Plasterers' and Stone Masons' Tools; section D, Blacksmiths' Tools; section E, Miscellaneous Goods; section G, Plumbers' Tools, and section I, Automatic Card Press.

The Northwest Hardware Company, Bellingham, Wash., is putting up a new three-story and basement building, 50 x 110 ft., joining in the rear with a two-story brick and stone building, 55 x 125 ft. Both in its external design and internal arrangement the new building has been designed to meet all modern requirements.

THE ATLANTIC CITY CONVENTIONS

**American Hardware Manufacturers' Association.
National Hardware Association.**

A great gathering of manufacturers and jobbers — Every section of the country represented in the attendance — Dr. Cook and Governor Fort make addresses — Special Brands a prominent topic of discussion — An interesting paper on Price Maintenance.

THE joint conventions of the American Hardware Manufacturers' Association and the National Hardware Association, the seventeenth of the former and the fifteenth of the latter, at the city by the sea with the famous boardwalk and the countless hotels, proved a magnet which probably attracted a larger attendance of members of both organizations, as well as ladies and

tions. Both association presidents were re-elected and their principal fellow officials as well, so that the work of the two bodies during the ensuing year will be largely on the satisfactory lines followed during the past 12 months.

In the telegraphic report which appeared in our last issue reference was made to the proceedings of the



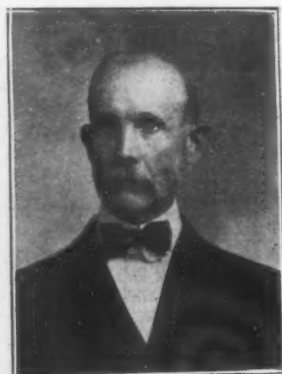
ROBERT GARLAND.



R. M. DUDLEY.



C. A. EARL.



J. D. MOORE.

other visitors, than any former gathering of the trade. The Marlborough-Blenheim, the headquarters of both associations, and where the different business sessions were held, was crowded almost to the limit of its great capacity, while many Hardwaremen were also registered at other hotels nearby. Weather conditions were of a somewhat mixed character, although sunshine and bracing atmosphere predominated. Many notables in the Hardware manufacturing and mercantile world were present, and practically every section of the country was represented.

Dr. Cook, whose polar conquest was indorsed at the testimonial banquet given on Thursday evening, this taking the place of the annual banquet of the National Hardware Association, and Governor Fort of New Jersey, were two special guests who contributed to make the gathering memorable. There were but two or three formal papers or addresses, and the business sessions of the two associations were largely occupied in hearing the reports of committees and discussing their findings and recommendations.

Atlantic City evidently fills the bill admirably, as it was again chosen as the scene of next year's conven-

Wednesday morning session, which was a joint assembly, participated in by both manufacturers and jobbers as well as other visitors.

Improvement in the Consular Service.

It is recognized that an efficient consular service is of vital importance to the commercial interests of the country. With a view to still further bettering the tone and work of the service the following resolution relative to appointments and promotions was adopted by the American Hardware Manufacturers' Association:

Resolved, That we earnestly recommend to the Sixty-first Congress of the United States, the enactment of such legislation as will provide for the further improvement of the consular service of the United States in foreign countries, and especially first, that all appointments be made to grades upon qualification of the candidate (as ascertained by the Examining Board) instead of by political preference.

Second, that all promotions be based upon ability and efficiency as shown in the service, especial care being taken to prevent any break in the chain of promotion from grade to grade; and

Third, that only American citizens be admitted to the service; and

Be it further resolved, that copies of this resolution be forwarded to the President of the United States, and to the chairman of the Senate Committee on Foreign Relations and to the House Committee on Foreign Affairs, upon the opening of the next session of the Congress.

Special Brands.

One of the subjects which called for much discussion at the Atlantic City conventions was that of special brands, which was entered into in the lobbies and in the assembly hall with a good deal of detail and spirit. The discussion was formally opened on Thursday afternoon at a meeting of the American Hardware Manufacturers' Association, to which the members of the National Hardware Association were invited.

The subject was brought before the meeting by P. B. Noyes, of the Oneida Community, Oneida, N. Y., who presented an admirable paper entitled "A New View of Jobbers' Special Brands." Admission to this meeting was limited strictly to members of the two associations and the delegates of the National Retail Hardware Association, who were, by a special act of courtesy, allowed to have part in the deliberations, to which they contributed in an interesting manner. It would have been the preference of the manufacturers to have had this an open session, but in deference to the wishes of the jobbers the meeting was held behind closed doors and the proceedings kept secret so far, at least, as a formal report of them is concerned.

Mr. Noyes' paper, which was a clear and forcible argument on the manufacturers' side of the question, has not been given to the public, and it is only indirectly that outsiders may learn its import. It should, however, be stated in justice to Mr. Noyes that he was entirely willing that it should be considered by the trade at large, but in view of the desire of the jobbers that the discussion should not be made public, the author of the paper and the manufacturers' association acceded in the spirit of courtesy to the request.

The debate was a protracted one and in it the jobbers certainly did full justice to their side of the question, while the manufacturers on the other hand were for some reason more reserved in standing up for their rights and interests in the premises. The retail merchants present made an interesting and valuable contribution to the discussion, and it is conceded that the weight of their opinion was in favor of the manufacturers' rather than of the jobbers' brands. When the subject came up in the separate meeting of the Manufacturers' Association the following resolutions were adopted:

Whereas, This association in convention in Pittsburgh June 11, 1909, unanimously adopted the following resolution:

"Whereas, The members of this association are endeavoring to stop the growth of special brand business and influence jobbers and retailers to more largely carry and push regular factory brands of goods; and

"Whereas, Our members are among the largest consumers of many lines of Hardware;

"Be it resolved, That the members of this association in the purchase of their own supplies accept only goods bearing a regular factory brand, thus encouraging by their own action those dealers who see fit to carry such factory brands of goods.

"Be it further resolved, That a copy of these resolutions be forwarded to the National Association of Manufacturers of the United States and the American Supply and Machinery Manufacturers' Association for their consideration;" and

Whereas, It is deemed of great importance to the manufacturing interests to further the intent of said resolution;

Therefore, be it resolved, That the officers of this Association be requested to make every effort to encourage other industrial associations to activity in making the above resolution effective.

The Scope of the National Hardware Association.

The membership of this association has heretofore been limited to the largest and most prominent jobbing houses in the trade and it will doubtless be its policy to maintain a similar high standard in the future. There is, however, a recognition of the fact that since the formation of the association there has been a growth and strengthening of some of the outside jobbers, so as to entitle them to membership. It is therefore not unlikely that there may be accessions to the membership from time to time, in view of the application of this principle.

George H. Maxwell on Irrigation and the Conservation of Our Natural Resources.

At a joint executive session of the two associations on Thursday afternoon George H. Maxwell of the American Homecroft Society, Chicago, delivered a forcible address under the ominous title of "Shall the Nation Endure?"

Mr. Maxwell referred to the devastation and loss of fertility of European countries, as well as Egypt, by the removal of the forests from the land and the exhaustion of the soil. He referred to the condition of some portions of China where the forests had been removed, causing disastrous floods, especially in the valley of the Yellow River.

Mr. Maxwell predicted that a deep channel could not be maintained in the Mississippi River and disastrous floods prevented ultimately except by storing the flood water at the source of the river and preserving the forests on the water shed. He spoke at considerable length on the importance of conserving the national resources of the country. He said it was a mistake for any one at any time to consider navigation apart from irrigation or forestation.

The work in former years of prominent members of the National Hardware Association in the interest of irrigation was referred to. The speaker urged a continuance of this interest.

The importance of building up country communities in preference to increasing the population of large cities was referred to at considerable length.

He said the time was fast approaching when there would be no public land for the settler; that the laws were such that the ownership of the public domain was falling into the hands of speculators and stockmen.

He urged the importance of every business man taking a deep interest in the subject of irrigation and the conservation of the natural resources of the country; that the nation could not endure except by avoiding the policy of devastation of natural resources pursued in ancient times.

The American Merchant Marine.

The rehabilitation of the merchant marine was the subject of the following resolution adopted by the manufacturers at their closing session on Friday afternoon:

Whereas, This association in convention in Atlantic City November 20, 1903, unanimously adopted the following resolution:

Whereas, Efforts have been and are being made to revive the American merchant marine through directing public attention to the need of such action, thus impressing upon the Congress of the United States the necessity of passing a bill providing for the payment of a reasonable subsidy to American shipping interests; therefore be it

Resolved, That this association recognizes in this movement benefits for American industry, as well as to the shipping interests, and indorses the movement as worthy of the favorable action of Congress.

Resolved, That a duly attested copy of this resolution be sent to the proper committees of the United States Senate and House of Representatives, and also, to all commercial and other bodies interested in foreign commerce; and

Whereas, President Taft in a recent public address revives interest in this most important matter; be it therefore

Resolved, That we now reaffirm the position taken by us in 1903 and urge the Congress of the United States to enact such legislation as will effectually rehabilitate the American merchant marine.

It will be noticed that reference is made to the address recently delivered by President Taft in which he pronounced himself in favor of a subsidy measure.

A plea in behalf of American ships was also made at the banquet on Thursday night in an address by Frank D. La Lanne, president of the National Board of Trade.

Officers for Next Year.

The presidents of both associations were re-elected for another year, thus testifying to the ability and wisdom which has characterized the administrations of Mr. Garland and Mr. Dudley during the past 12 months. C. A. Earl, New Britain, Conn., was re-elected a vice-president of the Manufacturers' Association, with C. M.

King, Pittsburgh, and T. H. Taylor, New York City, as new vice-presidents. New members of the Executive Committee are William H. Matthai, Baltimore, Charles D. Gates, Louisville, S. G. Gilfillan, Ironton, Ohio, and Wallace L. Pond, Providence, R. I., Messrs. Bailey, Kelly and Plumb continuing.

The only change in the jobbers' list of officials was the election of James H. Boucher, Rochester, N. Y., to fill a vacancy in the Executive Committee.

As a result the roster of officials of the two associations during the ensuing year will be as follows:

American Hardware Manufacturers' Association.

PRESIDENT: Robert Garland, Garland Nut & Rivet Company, Pittsburgh, Pa.

VICE-PRESIDENTS: C. A. Earl, Corbin Screw Corporation, New Britain, Conn.; T. H. Taylor, American Steel & Wire Company, New York City; Chalmers M. King, McKinney Mfg. Company, Pittsburgh, Pa.

SECRETARY-TREASURER: F. D. Mitchell, 309 Broadway, New York.

EXECUTIVE COMMITTEE: Robert N. Peck, chairman, Stanley Rule & Level Company, New Britain, Conn.; George T. Bailey, Oliver Iron & Steel Company, Pittsburgh, Pa.; W. C. Kelly, Kelly Axe Mfg. Company, Charleston, W. Va.; Fayette R. Plumb, Fayette R. Plumb, Inc., Philadelphia, Pa.; William H. Matthai, National Enameling & Stamping Company, Baltimore, Md.; Charles D. Gates, Turner, Day & Woolworth Handle Company, Louisville, Ky.; Wallace L. Pond, Nicholson File Company, Providence, R. I., and S. G. Gilfillan, Belfont Iron Works Company, Ironton, Ohio.

National Hardware Association.

PRESIDENT: Robert M. Dudley, Gray & Dudley Hardware Company, Nashville, Tenn.

FIRST VICE-PRESIDENT: Brace Hayden, Dunham, Carri-gan & Hayden Company, San Francisco, Cal.

SECOND VICE-PRESIDENT: J. D. Moore, Moore-Handley Hardware Company, Birmingham, Ala.

SECRETARY-TREASURER: T. James Fernley, 505 Commerce street, Philadelphia, Pa.

EXECUTIVE COMMITTEE: W. D. Taylor, Geo. Worthington Company, Cleveland, Ohio; A. J. Bihler, James C. Lindsay Hardware Company, Pittsburgh, Pa.; C. A. Knapp, Knapp & Spencer Company, Sioux City, Iowa; Harry L. Doten, Austin & Doten, Boston, Mass.; T. G. Walther, Hackett, Walther & Gates Hardware Company, St. Paul, Minn., and James H. Boucher, Mathews & Boucher, Rochester, N. Y.

T. James Fernley's Report as Secretary.

In his fifteenth annual report as secretary of the National Hardware Association, T. James Fernley, Philadelphia, summarized the conditions in the trade when the association was organized and the conditions as met with to-day, showing an improvement all along the line. The report continued:

We are very much pleased to report that our relations as an association with the manufacturers of the country are of a very satisfactory nature. It is conceded that as an association we are not undertaking any coercive measures. We realize that each man has a right to conduct his business in such manner as he may see fit.

We realize in connection with the mail order house question that it is the privilege of the manufacturer to permit his goods to be used as a football by this class of operators if he so desires.

We feel that it is his privilege to allow his goods to be sold at cost or less than cost.

Of course the manufacturer will also realize that the jobbers of the country and the retail merchants of the country, and all other good merchants, prefer to handle goods which produce a profit.

Meeting Low Prices on Certain Goods.

During the year we have sent to our members information concerning demoralized prices quoted on the product of quite a number of manufacturers.

CONTENTS.

	PAGE.
Iron and Steel Manufacturers Do Honor to Chairman Gary. Portrait	1217
Titaniferous Iron Ore Smelting at Bethlehem.....	1223
Titaniferous Ore in Puddling and Blast Furnaces.....	1223
Detroit Convention of the American Foundrymen's Association	1223
Chicago's Machinery Exhibition Warehouse. Illustrated..	1224
A Bethlehem Steel Corporation Note Issue.....	1225
The Greatest Steel Plant in the World.—V. Illustrated. With Supplement.....	1226
Looking After Credit.....	1231
The National Machine Tool Builders' Association.....	1231
A Unique Metal Rolling Machine. Illustrated.....	1232
Canada Wants Shipyards.....	1233
A Gayley Dry Air Blast Pressure Record. Illustrated....	1233
A New Wickwire Furnace at Buffalo.....	1233
National Founders' Association.....	1233
Reinforced Concrete for Factory Construction. Illustrated	1234
The First American-Made Bessemer Steel.....	1238
A Washburn Drafting Table. Illustrated.....	1238
The Great Lakes Engineering Works at Ashtabula.....	1238
Judicial Decisions of Interest to Manufacturers.....	1239
The New York High Pressure Fire Service. Illustrated..	1240
The New York Electrical Show.....	1244
American Electrochemical Society Papers.....	1244
Personal	1245
Activity at the Canadian Head of the Lakes.....	1245
Editorial:	
The Tribute to Chairman Gary.....	1246
Watching for Wasteful Costs.....	1246
Labor Conditions in Country Towns.....	1247
Is Railroad Equipment Deficient?.....	1247
Correspondence	1248
The United States Brake Shoe Company.....	1248
The Marking of Imported Small Articles.....	1249
The Austria-American Magnesite Works.....	1249
Error in Bonded Smelting Provision of New Tariff Law..	1249
Rust-Preventing Paints for Metal Structures.....	1250
The Prevention of Rust in Reinforcement for Concrete...	1251
A Mackintosh, Hemphill & Co. Volume.....	1251
The Allis-Chalmers Company.....	1252
The Thirtieth Anniversary of Basic Bessemer Steel in Germany	1252
News of the Works:	
Iron and Steel.....	1253
General Machinery.....	1253
Foundries	1253

Power Plant Equipment.....	1254
Bridges and Buildings.....	1254
Fires	1254
Hardware	1254
Miscellaneous	1254
The Iron and Metal Trades:	
A Comparison of Prices.....	1256
Prices of Finished Iron and Steel f.o.b. Pittsburgh...	1256
Chicago	1257
Birmingham	1258
Pittsburgh	1259
San Francisco.....	1261
St. Louis.....	1261
Buffalo	1262
Philadelphia	1263
Cleveland	1264
Cincinnati	1264
Structural Plant Enlargement in the Chicago District...	1265
Metal Market.....	1266
Iron and Industrial Stocks.....	1266
New York.....	1267
The United States Rail Company Succeeds the Maryland Rail Company.....	1267
The Buffalo Manufacturers' Club Industrial Exposition...	1267
The Machinery Trade:	
New York Machinery Market.....	1268
Chicago Machinery Market.....	1269
Cincinnati Machinery Market.....	1269
Milwaukee Machinery Market.....	1270
Cleveland Machinery Market.....	1271
New England Machinery Market.....	1271
Philadelphia Machinery Market.....	1272
Government Purchases.....	1273
Customs Decisions.....	1273
Horace T. Potts Co. Will Sell a Line of Swedish Tool Steel Hardware:	
Condition of Trade.....	1275
Notes on Prices.....	1277
Cost of Doing Business in the Implement and Vehicle Trade	1279
The Michigan Hardware Association's Advertising Contest	1279
Metropolitan Hardware Company's Establishment. Illustrated	1280
The Buffum Tool Company's Catalogues.....	1281
The Atlantic City Conventions. Portraits.....	1282
Holdfast Clinching Nails.....	1294
Ely's Double Jointed Steel Ice Tongs.....	1294
Myers Bulldozer Power Working Head. Illustrated..	1294
Coldwell Lawn Trimmer. Illustrated.....	1295
Novelties in Brass Bird Cage Stands. Illustrated....	1295
Motor Driven Wall Paper Trimmers.....	1295
The Yankee Double and Single Sneed Breast Drills..	1295
Hy-Grade and Hy-Spede Roller Skates. Illustrated..	1296
Current Hardware Prices.....	1298

We have never stated that any given manufacturers were selling any particular price cutter. We have simply stated that on a given page of a certain catalogue prices on such a line of goods were made, and we have suggested that the members of this association attempt to buy goods so as to meet this competition.

Many manufacturers have thanked us for calling their attention to the matter and have insisted on the quoting of proper prices.

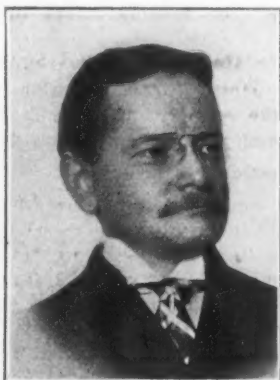
One or two have taken particular offense. They said some unkind things about the secretary-treasurer of this association, and have threatened to employ first-class lawyers and obtain relief for injuries inflicted; indeed, one manufacturer went so far as to apply to the United States Government and ask that the National Hardware Association be refused the right of using mails.

Our Method of Work

was fully explained to the Chief Inspector of the Postal Department, who stated that it was utterly absurd for any one to make such an application, and that what we were doing was certainly not in conflict with the postal laws, and that he further thought the plan was a most excellent one.

There are two features involved:

1. Giving our members information concerning the character of competition they are compelled to meet.



F. D. MITCHELL.



T. JAMES FERNLEY.



BRACE HAYDEN.

2. Suggesting to them the propriety of attempting to buy goods so as to meet such competition.

Conforming to the Letter and Spirit of the Law.

During the 15 years of active work we have been very careful to closely conform to the letter and spirit of all laws, both national and State. We have had as a legal adviser, John G. Johnson of Philadelphia, who has a national reputation.

Visiting the Members.

During the year we have visited as many of our members as possible in view of the large amount of office work demanding attention. It is very pleasing on the occasion of these visits to you to know that you are looking upon this organization as a department of your business, and that you consider the secretary of the association as being in your confidential employ. We hope this condition will ever continue.

Co-operation with Manufacturers.

Among our manufacturing friends the tendency to operate under pool arrangements has not been as intense as in some previous years.

Whenever we have learned of manufacturers getting together for their own benefits we have endeavored to be present, urging upon them the importance of granting proper protection to the jobbing trade.

Resale Prices.

There is undoubtedly a growing tendency on the part of our manufacturing friends to protect the resale price on their goods. Upon investigating the complaints of the lack of interest shown in manufacturers' brands on the part of some jobbers we have been led to believe that through unrestrained competition profits have been

so nearly eliminated that jobbers were compelled to place on the market lines of goods which they could control.

We have known of instances where manufacturers who have put into force a resale price and insisted on the maintenance of it have found a considerable increase in the volume of the sale of their own brand goods.

We think this is a question which will bear very close consideration on the part of all parties interested.

Sectional Associations.

We have noted with a great deal of pleasure the growth of trade association all over the country. The Southern Hardware Jobbers' Association is in a very vigorous condition. The same can also be said of the Pacific Coast Hardware & Metal Association, the Missouri Valley Hardware Jobbers' Association, the New York State Hardware Jobbers' Association and the New England Iron & Hardware Association and others.

Retail Associations.

It is very pleasing to note that the various State retail Hardware associations are growing in numbers and influence. It is also very pleasing to report that the National Retail Association is on most friendly terms of intercourse with us.

We report about the same number of members as

last year. One or two have been added and about the same number have retired from business.

Transportation Committee's Report.

The report made by the Transportation Committee of the National Hardware Association was to the effect that practically the only matter which had been referred to it during the year, had been the suggestion that the Association become a member of the National Industrial Traffic League, the object of which is to undertake through conference, publicity and other proper means, to promote such knowledge of transportation affairs as will aid in a thorough understanding upon the part of the railroads and the shipping public of each other's needs; to assist in the enactment of clearly defined laws governing inter-state transportation; to have an interchange of views regarding inter-state transportation, so that the public may be relieved of all uncertainty as to its relations to the carriers, and to acquaint the regularly established tribunals with the needs of the shipping interests and the effect upon commerce of the rulings of such bodies.

The committee's report continued:

Several measures were introduced at the last session of Congress by the Traffic League which if passed would have considerably simplified matters for shippers. One of these bills gave

The Right to Route Freight

beyond the initial road over which shipment is made to the shipper instead of to the railroad company. The United States Supreme Court has decided in what is known as the California Fruit Case that the initial road has the right to route freight beyond its own lines in any way it sees fit. The

Interstate Commerce Commission has ruled, basing its ruling on this decision, that if initial carriers reserve this right in their tariff they may legally exercise it and many tariffs now bear this reservation.

Responsibility for Rate Quotations Upon the Carrier.

Another bill made it obligatory upon the railroads to quote rates in writing and to put correct rates on bills of lading if requested, making it a misdemeanor to put down or quote anything other than the legal rate. The effect of this bill would be to place the responsibility for rate quotations upon the carrier where it belongs, and not leave the matter in its present state. As matters now stand, a carrier may quote any rate it happens to find and charge any rate it happens to have legally in effect, leaving the shipper with no remedy based on the quotation.

Giving Commission Power to Stop an Advance in Rates.

Another bill aimed to amend the Interstate Commerce Act in such a manner as to give the Commission power to stop an advance in rates before that advance takes effect.

Efforts Will Continue.

While these bills did not come up for consideration at the last session of Congress, it is understood that the league will continue in its efforts to have them placed on the statute books.

It is evident that a good deal more attention is being given to traffic matters by shippers generally. This is a matter of congratulation, as the average shipper seems to have had a very hazy idea of the proper rates and classifications under which his shipments are or should be made.

Local Freight Bureaus.

Probably the most effective work in disseminating knowledge among shippers and bringing about a better understanding between transportation companies and their customers has been accomplished by the numerous local freight bureaus throughout the country, which employ expert managers, who have the necessary information and facilities to serve the interests of their members. Many chambers of commerce and commercial clubs now maintain traffic bureaus, which act for their members collectively, and a number of these have done excellent work in remedying abuses and securing better facilities for their members.

Those of our members who do not feel warranted in themselves incurring the expense of employing a traffic manager, who is sufficiently familiar with this complex subject to do it justice, can, no doubt, receive substantial benefit by co-operating with their local traffic bureau or agitating the formation of such an organization if none already exists in their locality.

Your committee feels that it would be inadvisable to recommend that our association take a definite position in regard to the individual phases of traffic matters, as the conditions governing transportation are widely different in the various sections of our country.

Classification of Freight.

One of the matters, however, which might well have the attention of our members is the classification of freight. The official classification is revised at intervals and upon formal application the classification committees of the railroads will consider the equity of any proposed change.

As matters now stand there are several different classifications applying to different districts—one for the East, one for the West and one for the Southern States. No doubt those of our members located in the extreme West would favor the suggestion of a member of our committee from that section that a larger differential be provided between the carload and less than carload rates, and that a universal

classification be made to cover the entire United States.

Jobbers' Relations with Manufacturers and Retailers.

In his annual address to the members of the National Hardware Association R. M. Dudley spoke as follows in regard to the relations existing between the association and manufacturers and the retail trade:

The object of the association, as set forth in its constitution and by-laws, is to create more cordial relations between each other as jobbers and between our members and the manufacturers and our customers, the retail merchants of the country. We constantly have this foundation stone of our organization uppermost in mind.

It Is No Part of Our Work to Create Friction

or to get out of harmony with any of those who are the source of supply, or with those for whose benefit we assemble at great expense of time, talent and money, a variety of goods which shall best meet requirements.

It has been our policy to be somewhat fearless in presenting requests to our manufacturing friends, but whatever has been done has had for its object the bettering of trade conditions.

Our relations with the manufacturers are very cordial and pleasant, and I believe they esteem us as their true friends and coworkers and realize that our interests are mutual. We consider the friendship, support and hearty co-operation of the manufacturers one of our most valuable assets.

To-day we find the National Hardware Association commended by the manufacturers, popular with the retail merchants of the country, and loyally supported by upward of 200 leading jobbing houses of this country.

Educational Influences.

Fifteen years ago some manufacturers were not respecting either the jobber or the retail merchant. Ordinary consumers were, in many instances, being quoted extreme prices. Through the educational influences of this association trade is now running to a greater degree than ever through its natural channels.

We do not hesitate to announce it as our policy to see that all branches of the trade are properly respected. We hold that the jobber is the natural distributor of the manufacturer, and that the retail merchant should be protected in the enjoyment of the consuming trade. Our observation has led us to believe that the manufacturer who ignores the jobber will, in turn, ignore the retailer.

We have also demonstrated beyond any peradventure of a doubt that goods can be placed in the hands of the consumer at a lower price where the manufacturer recognizes the proper avenues of distribution.

The Euchre.

The euchre on Friday evening was a highly enjoyable and admirably carried out affair. While many departures were taken during the day by those who found it imperative for them to break away from the proceedings, more than 200 ladies and gentlemen sat down to the tables and competed for the prizes which were donated so profusely by well known manufacturers of Hardware and related lines. Many of the prizes were of exceptional value, and the recipients were more than gratified that fate had been so kind to them. The manufacturers who thus supplied the spoils for this friendly though spirited contest were as follows:

American Axe & Tool Co., Glassport, Pa.	Landers, Frary & Clark, New Britain, Conn.
American Can Co., New York.	Lawson Mfg. Co., Chicago.
American Fork & Hoe Co., Cleveland, O.	Lovell Mfg. Co., Erie, Pa.
American Horseshoe Co., Phillipsburg, N. J.	Mack & Company, Rochester, N. Y.
American Pulley Co., Philadelphia.	Manning, Bowman & Co., Meriden, Conn.
American Screw Co., Providence, R. I.	Markham Air Rifle Co., Plymouth, Mich.
American Sheet & Tin Plate Co., Pittsburgh.	McCaffrey File Co., Philadelphia.
American Steel & Wire Co., Chicago.	Meriden Cutlery Co., Meriden, Conn.
American Wringer Co., New York.	Miller Bros. Cutlery Co., Meriden, Conn.
	Millers Falls Co., New York.

Atha Tool Co., Newark, N. J.
 E. C. Atkins & Co., Indianapolis, Ind.
 Oscar Barnett Foundry Co., Newark, N. J.
 Blissell Carpet Sweeper Co., Grand Rapids, Mich.
 George H. Bishop Co., Lawrenceburg, Ind.
 Boss Washing Machine Co., Cincinnati, O.
 Bryden Horseshoe Co., Catsauqua, Pa.
 Caldwell Mfg. Co., Rochester, N. Y.
 Carborundum Company, Niagara Falls, N. Y.
 Challenge Cutlery Corporation, Bridgeport, Conn.
 John Chatillon & Sons, New York.
 Clinton Wire Cloth Co., Clinton, Mass.
 Clyde Cutlery Co., Clyde, O.
 Coldwell Lawn Mower Co., Newburgh, N. Y.
 Consolidated Fruit Jar Co., New Brunswick, N. J.
 Corbin Screw Corporation, New Britain, Conn.
 Daisy Mfg. Co., Plymouth, Mich.
 Thomas Devlin Mfg. Co., Philadelphia.
 Henry Disston & Sons, Philadelphia.

Lalanc & Grosjean Mfg. Co., New York.
 Charles Morrill, New York.
 National Enameling & Stamping Co., New York.
 New England Enameling Company, Middletown, Conn.
 New York Leather Belting Co., New York.
 Nicholson File Co., Providence, R. I.
 North Brothers Mfg. Co., Philadelphia.
 North & Judd Mfg. Co., New Britain, Conn.
 Jas. Ohlen & Sons Saw Mfg. Co., Columbus, O.
 Oneida Community, Ltd., Oneida, N. Y.
 Payson Mfg. Co., Chicago.
 Pike Mfg. Co., Pike, N. H.
 Fayette R. Plumb, Inc., Philadelphia.
 Potter Mfg. Co., Geneva, O.
 Pullman Mfg. Co., Rochester, N. Y.
 Reading Hardware Co., Reading, Pa.
 Rome Mfg. Co., Rome, N. Y.
 Russell Jennings Mfg. Co., Chester, Conn.
 L. A. Sayre & Co., Newark, N. J.
 S. Severance Mfg. Co., Pittsburgh, Pa.
 Standard Chain Co., Pittsburgh.

contributed the playing cards; the Bryden Horse Shoe Company, Catsauqua, Pa., the tally cards; the McCaffrey File Company, Philadelphia, the punches for registering victory or defeat, and the James Dixon Crucible Company, Jersey City, N. J., the lead pencils. The liberal supply of ice cream required for the occasion was furnished by the North Bros. Mfg. Company, Philadelphia.

Special credit for the carrying out of the details of the affair is due to Miss Emma Bihler of Pittsburgh, who was chairwoman of the Ladies' Auxiliary Committee, consisting of 25 members. The ladies were also aided materially in the work of arranging and looking after the prizes and awarding them by J. J. McCaffrey of the McCaffrey File Company and A. S. King of the National Enameling & Stamping Company, both of Philadelphia.

Souvenirs.

For the past two or three years the custom of distributing souvenirs at the conventions has been steadily declining and there were probably fewer of these than at any former gathering. Among the manufacturers who got up something for the occasion were the following:

Richmond Cedar Works, Richmond, Va.: Freezer Bank.
 Woodhouse Chain Works, Trenton, N. J.: Dating Stamp.
 Daisy Mfg. Company, Plymouth, Mich.: Blotter Pad.
 National Enameling & Stamping Company, New York City: Miniature Pail.



T. H. TAYLOR.



P. B. NOYES.



C. M. KING.



R. E. SHANAHAN.

Dwight Divine & Son, Ellenville, N. Y.
 E. I. du Pont de Nemours Powder Co., Wilmington, Del.
 Dover Mfg. Co., Canal Dover, O.
 Eagle Lock Co., New York.
 Theo. J. Ely Mfg. Co., Girard, Pa.
 Enterprise Mfg. Co., Philadelphia.
 Graham Nut Co., Pittsburgh.
 C. T. Ham Mfg. Co., Rochester, N. Y.
 Hamilton Rifle Co., Plymouth, Mich.
 Hart & Cooley Co., New Britain, Conn.
 Heller Bros. Co., Newark, N. J.
 Hero Fruit Jar Co., Philadelphia.
 John A. Hurley, Inc., Bridgeport, Conn.
 Irwin Auger Bit Co., Wilmington, O.
 Keasbey & Mattison Co., Ambler, Pa.
 Keuffel & Esser Co., New York.
 Kirk-Latty Mfg. Co., Cleveland, O.
 George W. Korn Razor Mfg. Co., Little Valley, N. Y.
 Lake Erie Iron Co., Cleveland, O.

Stanley Rule & Level Co., New Britain, Conn.
 Stanley Works, New Britain, Conn.
 J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
 N. & G. Taylor Co., Philadelphia.
 C. C. & E. P. Townsend Co., New Brighton, Pa.
 Tubular Rivet & Stud Co., Boston, Mass.
 United Roofing & Mfg. Co., Philadelphia.
 Wiebusch & Hilger, New York.
 Lyon Mfg. Co., Brooklyn, N. Y.
 Huntley Mfg. Co., Chicago, Ill.
 United States Horseshoe Co., Erie, Pa.
 United States Stamping Co., Moundsville, W. Va.
 Utica Drop Forge & Tool Co., Utica, N. Y.
 Warwood Tool Co., Wheeling, W. Va.
 L. & I. J. White Co., Buffalo, N. Y.
 Whitman & Barnes Mfg. Co., Chicago.
 Samuel Winslow Skate Mfg. Co., Worcester, Mass.
 Wood Shovel & Tool Co., Piqua, O.
 Youngstown Sheet & Tube Co., Youngstown, O.

Bryden Horse Shoe Company, Catsauqua, Pa.: Deck of playing cards.
 Nevilsip Mfg. Company, New Brunswick, N. J.: Match Box.
 McCaffrey File Company, Philadelphia, Pa.: Manicure File.
 Chantrell Hardware & Tool Company, Reading, Pa.: Pair of men's garters.
 G. & H. Barnett Company, Philadelphia, Pa.: Manicure File.
 Charles W. Shonk Company, Chicago, Ill.: Shonk reference calendar.
 Carver File Company, Philadelphia, Pa.: Cigar in individual box.

Atlantic City Again.

Cordial invitations to hold next year's conventions in those cities were received from Cincinnati, Toledo, Niagara Falls and Richmond, Va. After a conference of committees representing both associations, it was decided by a substantial vote to come to Atlantic City again next year.

The Chicago Special Train.

Promptly at 2.45 on Monday afternoon the special train bearing the Western delegation pulled out of the Lake Shore Station, Chicago, en route to Atlantic City. Before leaving Chicago many of the Hardware men made their headquarters at the New La Salle Hotel, where they had an opportunity of exchanging greetings with local manufacturers and jobbers. The local jobbing houses also were visited by quite a number of parties from Western points who had come to Chicago to take the special train.

In swift succession the train passed Indiana Harbor, Gary, where the immense plant of the United States Steel Corporation is located, South Bend, and promptly

Operating paraphernalia was provided by the Dupont de Nemours Powder Company, Wilmington, Del., which

on time pulled into Elkhart, Ind., where arrangements for a group photograph of the party had been made. The weather, unfortunately was cold and chilly, and there was no regret expressed when this part of the programme was concluded, and the party lost no time in hurrying back to the comfortable train.

At six o'clock announcement was made that the banquet tendered to delegates and friends of both associations would be served. The committee had thoughtfully arranged two dining cars seating 60 in all, which cars were tastefully decorated with smilax and cut flowers, and the party sat down to enjoy a delightful menu.

When that part of the dinner was reached where toasts are usually in order, a number of impromptu addresses were made and much enjoyed. After dinner the ladies in the party held receptions in the several cars to which they had been assigned, and card parties were made up, and after a delightful evening spent in this manner the entire party retired early to enjoy the day ride on Tuesday, which, by the way, was via the West Shore route, taking the party down the historic Hudson and into Jersey City. The trip down the Hudson was one of the most enjoyable features of the occasion. The weather was perfect, and at West Point the party had an opportunity of seeing the reproduction of the Clermont, which was anchored off shore at that point. Pulling into Jersey City the train was transferred to the tracks of the Central Railroad, and then at Winslow Junction the Reading Railroad took the train and delivered it safely at Atlantic City. Too much credit cannot be given W. H. Bennett, chairman of the committee in charge of the trip, who not only made the arrangements, but saw to it personally that these arrangements were carried out. He was ably assisted by F. E. Sorensen, city passenger agent of the Lake Shore Railroad.

At 10 o'clock Wednesday morning about 50 of the party who made the trip on the special train from Chicago, assembled on the veranda of the Marlborough-Blenheim to participate in the presentation of tokens of appreciation to Messrs. Bennett and Sorensen. Mr. Bennett was presented with a silk hat and a silver-handled cane, the presentation being made by H. H. Roberts. Mr. Sorensen received an English traveling bag, which was presented by D. A. Merriman of the American Steel & Wire Company, Chicago. Mr. Sorensen having left for Chicago, the bag was accepted by Mr. Bennett on behalf of Mr. Sorensen.

Mrs. C. H. Williams of Streator, Ill., in a very graceful and happy address then presented to Mr. Bennett a Duntley Vacuum Cleaner, this being a token to be delivered to Mrs. Bennett.

The Business Outlook and the Return of Prosperity.

At the joint session of both associations on Wednesday forenoon, to which reference was made in the telegraphic report in our last issue, there was an interesting discussion in regard to the business outlook and the return of prosperity. This was participated in by Robert Garland, S. Norvell and R. R. Williams. Mr. Garland referred to his views as embodied in his address made when introduced to the gathering at the beginning of the session, which were as follows:

Address of Robert Garland.

Going back just two years ago in this same house and in this very room we met and discussed one afternoon "The Future Outlook," and contrasting that time and its future happenings with the present time and its bright future prospects, the differences are as between night and day, as between shadow and sunshine.

While we were convening here in October, 1907, the disastrous news was received that one of the greatest industrial corporations of this country—in fact, of the world, had gone into the hands of a receiver, while banks and trust companies in different cities were closing their doors. The works of that great industrial corporation

are to-day running full, with plenty of orders, and with bright prospects, and it has not only resumed the payment of dividends to its stockholders, but has, in addition, paid a dividend of 3½ per cent. on account of its preferred cumulative dividends for the past two years, which amounted to 12¼ per cent.

Recuperative Powers of American Business Men.

I read an account recently that our friends across the water, bankers and business men, were amazed at the strong recuperative powers of the American business people, who could recover from a condition such as ours was in any period short of ten years. We not only had poor business and a scare in banking circles, but we were also confronted with a tariff revision, something that in itself always unsettles; and, while the hard times lasted much longer than any of us could foresee, it is particularly pleasing to meet here again and know that the suspense is over, and that we are now unquestionably entering into a period of prosperity. The railroads have placed large orders for rails, the car building companies are full of orders, and this means additional equipment and supplies all along the line. All mills and factories in iron, steel and Hardware lines are practically running on the old-time basis.

Based upon demand entirely, prices are gradually yet slowly adjusting themselves. There is no indication of a boom, and it is hoped that there will be no such thing as a runaway market.

Tariff Board.

While it is a blessed thing that we are through with tariff agitation in a general sense, it must be remembered that we now have with us a tariff board, and we must hope that the activities of that board will be directed in other channels than ours. From all accounts it would seem that its efforts will be for some time along the lines of international problems, doing its best to preserve and maintain tariff peace, and prevent any further complications with foreign governments, although it is possible that it will give some attention to the domestic schedule on woollens, the woolen manufacturers having asked for some remedial legislation. Let us hope, therefore, that they will spend a few years of investigation along lines outside of the Metal Schedule and its contents. We have already received some pretty hard knocks, and we will be satisfied to have an opportunity to attend strictly to business for a number of years without hearing again that unsettling phrase, "Tariff revision."

And now that "everything is lovely and the goose hangs high" let us be conservative. I believe we are all satisfied that business is good and is constantly getting better, and we will look for a good year for 1910, and will hope that it will be succeeded by other good years—the more the better. We must not lose our heads. What we want is **good business at fair prices, no boom, and no runaway market.**

Mr. Norvell's View of the Situation.

President Dudley called on S. Norvell of the Norvell-Shapleigh Hardware Company, St. Louis, for an expression of his views as a prominent jobber doing business over a wide expanse of territory:

As an editorial jobber I feel since I have been an editor that my talk is too valuable to give out for publication. I can remember very distinctly two years ago in this room some of us who had nothing but drafts in our pockets with which to pay our hotel bills wondered whether we could get these drafts cashed. We had heard of the failure of the Knickerbocker Trust Company in New York and some of the prominent merchants and financiers who were with us suddenly left the meeting and never showed up afterward.

Mr. Norvell then referred to the manner in which the panic gradually extended from the East to the West; that it was a long time before it was felt in the West. That even at the present time the effect of the panic had not yet disappeared from Arizona and New Mexico, and some of the most distant points in the Southwest. That in

some of these points they were suffering more to-day from the panic than they did two years ago.

He said that many business men lost their nerve during the panic and unnecessarily discharged their salesmen and other help and curtailed their business; that in many instances merchants who continued operations as usual experienced no bad effects from the panic; that in many instances there was no real reason for fear. Continuing he said:

Now it seems to me at this time there is no boom in sight. I know back in the West we are not working at night, but we are having a good steady business and we think the matter of prosperity depends a good deal upon ourselves. We find that people who attend to business strictly get along pretty well.

Mr. Norvell expressed the opinion that jobbers would secure better results in their business if they would allow the men who were experienced in their special departments to dictate the policy of that department rather than for the head of the house to attempt to interfere with the details of that department to the neglect of the financial end or some other branch of the business.

R. R. Williams' Address.

In introducing R. R. Williams, Hardware editor of *The Iron Age*, President Dudley remarked that the speaker was neither a manufacturer nor a jobber, but a man who perhaps watched and kept in as close touch with conditions throughout the country as any man in the United States. Mr. Williams spoke as follows:

One of the things that an editor learns as the years go by is the wisdom of conservatism and reserve in utterance, and the especial peril there is in attempting to forecast the future in the line of prophecy.

I should judge on general principles, looking in the faces of those who are gathered here, that we are not only having good times, but are going to have still better times; for I am confident that it is the opinion of this assembly of wise men and of wiser and more gracious ladies, that things are mending and getting in splendid shape. I judge that this is the consensus of opinion on the principle that the answer to the question in regard to the coming of prosperity will depend to a certain extent upon temperament. If a man is a pessimist, the future will not appear to him very bright. If he is an optimist, the future will be full of good things and opportunities for profitable work. Those who attain the positions of influence occupied by those in this presence are not pessimists, for pessimists very seldom get near the top. I believe this is a company of optimists, who constitutionally take a cheerful view of things, and things have a marvelous way of shaping themselves according to the temper of the man that has to do with them. To those who knock, it is opened; to those who ask, it is given.

When I was young in the work of an editor I had a certain lesson from one of my children. The boy said to me, "Father, is Mars inhabited?" I said, "I don't know." "Father, is there any such thing as a sea serpent?" I admitted my ignorance reluctantly and as gracefully as I could. "What about the North Pole?" I told him, "I don't know." Then after reflection he came out with this question: "Well, father, how in the world did you ever get to be an editor?" Since then, sitting at the feet of that boy, I have learned that the part of an editor is to have opinions upon every subject that comes up. I am not afraid to tackle the tangled questions of special brands or catalogue houses or classified lists. There are a great many delicate questions relating to the interests of jobbers and manufacturers, and these sometimes on the surface seem to conflict, but somewhere there is a point of contact where there may be harmony, but no matter how mysterious the question I grapple with it.

Optimism.

Now in regard to the prosperity—the coming again of the old time prosperity. On general principles I believe it is coming because I am an optimist. When a man "can look with delight on nature and hope on

human kind" and find a sweetness and a richness in life he is not a pessimist. He cannot be. Do you know the definition of a pessimist? A pessimist is a man who in the presence of two evils chooses them both. Mr. President, an optimist is never confronted by things or conditions in which there is not a good to choose, and a path for the turning away from what may seem to be an evil.

I believe prosperity is coming, but then when I put on my thinking cap I say, "Yes, prosperity is coming, and there is going to be again a relapse somewhere from prosperity to hard times. Trade is going to be given again the discipline of times that are good and of times that are bad, and as a result of that discipline there is going to be a wiser, more sane, more conservative conduct of business, and a larger and more permanent success.

Coming Months Will Bring Good Trade.

Mr. Norvell called our attention very happily to the change in the conditions under which we meet to-day as compared with those of two years ago. Then it was doubt and dismay and hesitancy, a feeling that we could not see into the clouds that were gathering around us. Now it seems that, as in nature, so in the commercial world, there is a cloudless sky under which we meet. Good times are coming. I believe in all sincerity that the trade in the coming months is going to be good. I cannot help feeling that next year it is going to be better not only than it has been this year, but than it is at the present time when the year is going out with so much grace and dignity. Good times are coming. There may be a little relapse from some high prices that may unduly develop.

But this is a wonderful country in which we live. I have been permitted during the last year to see more of it than is my usual annual lot, and I have been impressed with the splendid prosperity that prevails everywhere. Now you know the disturbance that culminated two years ago was not because the people were impoverished—was not because there was any disturbing of the essential foundation of commercial well-being. It was largely on the surface. Some of the questions that had to do with that disturbance are not yet settled, and it may be that if there is unwise action by our legislators, by those who are at the center of things in Washington, in an attempt to disturb things—this may interfere with what promises to be an eminently successful future; but I think we can all with very sincere confidence and courage take hold of the work that we have to do in the assurance that things are going from that which is good to that which will be still better.

Mr. Dudley's Views.

The subject was also touched upon in the annual presidential address to the jobbers by Robert M. Dudley in the following vein:

While business conditions since our last convention haven't been in every sense satisfactory there has been such a marked improvement in the past few months that it is a matter of congratulation. This improvement has gathered strength and momentum until the business outlook to-day does not present a cloud on its horizon.

The "tillers of the soil" who constitutes the basis of prosperity in this country, are certainly enjoying a season of good fortune, peace and plenty? They are harvesting this year more than an average crop and are marketing it at prices far above previous years, thus making it exceedingly profitable. The large increase in exports and imports of our country indicates a return of active business conditions. The time for retrenchment, restriction and limited effort is behind us and we can look with confidence to the future? Renewed activity is now noticeable in every department of the Hardware trade.

Having passed through a period of financial depression lasting about 18 months we have many things for which we should be thankful, and not the least of these is that we have an able and conservative man at the

head of our National Government, and no fears of any dangerous and menacing legislation.

I believe our members give this association due credit for the helping hand which it has extended the trade during these troublous times. The great advantages of being organized and in close touch with the manufacturers have enabled us to quickly disseminate valuable information and conservative advice, thus preventing demoralization in prices on many lines of goods. We do not believe the benefit of our work in preventing a general demoralized condition was confined to our membership and the jobbing trade alone, but extended to all branches of the business, embracing both manufacturers and retailers.

Price Maintenance.

A valuable paper on the subject of "Price Maintenance" was read before the Manufacturers' Association at the Thursday morning session by R. E. Shanahan, secretary and general manager of the Bissell Carpet Sweeper Company, Grand Rapids, Mich. In view of the importance of the subject we give the paper substantially in full, as follows:

I esteem it a great honor as well as privilege to be requested for the second time to address so notable a body of business men as your organization comprises on the subject of "Price Maintenance;" and I cannot help but feel that this augurs well for the growing sentiment in favor of this system of business policy.

From my point of view, the policy of price maintenance or restricted prices, is so broad in scope, so far-reaching in beneficent results, as to be worthy of the thoughtful consideration and earnest support of every manufacturer, jobber and retailer in this country. From an ethical standpoint, price maintenance typifies one of the best moral elements in the conduct of business. It is fundamentally sound in principle and pre-eminently just and beneficent in practice, fostering and stimulating as it does the best ideals in commercial life; promoting character in business and securing to its devotees the confidence of the public, which is in itself a valuable commercial asset.

A Fair Living Profit for All.

There are certain inevitable laws in trade that affect in common the manufacturer, the jobber and retailer, and price maintenance recognizes the basic principle of commercial justice and equity—namely, that the manufacturer, jobber and retailer, in the process of distribution, are entitled to a fair living profit in the sale of any commodity.

Insures Maintenance of Quality.

Experience has taught, and I believe you will all bear me out in this statement, that the maintenance of prices will more nearly insure the maintenance of the quality of an article than any other factor contributing to its sale. Not only will the maintenance of prices insure the high quality of an article, but also its very permanence on the market as well. A Hardware merchant of my own city told me some time ago that price cutting to his knowledge had driven from the market many an article of Hardware of the highest merit, and the reason for this is perfectly obvious.

Effect of Nonuniform Prices.

In the beginning I said there were certain inevitable laws of trade that affect in common the manufacturer, jobber and retailer, and that work out with mathematical certainty. One of these is that the article that is placed on the market without the stipulation that it must be sold at uniform prices, both wholesale and retail, will in a short time, be retailed at such low prices as to destroy all profit in its sale, thus killing the demand for it with both jobber and retailer, leaving open to the manufacturer as a last hopeless course the lowering of his prices, which means the deterioration of the quality of the product. So it seems to me that it can be logically maintained that price cutting is demoralizing from beginning to end, working detriment, disappointment and loss to all concerned, manufacturers, jobbers, retailers and consumers.

Bissell Sweeper Selling Policy.

In order to expound the practical application of a sound, rigidly enforced system of price maintenance, I hope I may be pardoned for using in the main the Bissell Carpet Sweeper Company as an exponent of this principle, for as I have never been connected with any other business, for accuracy of detail I must necessarily confine myself to what I know about the policy of price maintenance as exemplified in our business.

When the Bissell Sweeper was introduced on the market 33 years ago, the policy of price maintenance, of fixed wholesale and retail prices, same to be rigidly enforced, was practically unknown, especially in connection with the sweeper business. No manufacturer of carpet sweepers except ourselves (until within the last few years, when they have been forced to follow our lead) ever conceived the idea of establishing fixed retail prices on his goods, and what has been the result? Except that an intelligent presentation of this subject demands a reference to our competitors and their business policy, I would not make such reference at this time; therefore I trust I may be pardoned for making comparison to more clearly convey to you the things that lie at the bottom of this question, and that will serve to make clear the effect of price maintenance upon a business.

Competing Carpet Sweepers.

Carpet sweepers were manufactured and marketed long before the introduction of the Bissell, but the policy of our competitors from the beginning to the present time has been to seek recognition through the offering of lower prices, totally disregarding the retail prices with the result that their product has been sold at any price suiting the whim of the dealer, killing the profit for every other merchant handling the goods, and finally, doing the inevitable, killing the demand for the goods thus loosely marketed.

I want to emphasize here that it must not be assumed that our competitors have been men of mediocre ability, with limited capital, thus accounting for any little success we have had. On the contrary, we have had competitors made up of the ablest business men in our own and other cities, backed by vastly more capital than ourselves; but their failure to obtain prominence in the business was due primarily to two things: First, they have never made the carpet sweeper an exclusive line of manufacture, and secondly, their selling policy has from our joint of view been greatly imperfect.

Reason for Bissell Success.

Considering that we have had competition all the time we have been in business, that our competitors in many instances have been men of unquestioned ability and pronounced successes in other lines, and that they have had in many instances more capital than ourselves to prosecute their business; that they always claimed to have a superior product to ours; always offered it at a lower price than ours; what should be the reasonable conclusion as to the causes that have made the Bissell Sweeper the recognized leader throughout the world? Simply this: With the beginning of our organization we established our business on a sound system of price maintenance, and saw to it that our prices were strictly enforced.

The best proof I can give you as to the vital force and far-reaching effect of price maintenance in our business, supplemented by strong, consistent advertising, is to say that we are to-day manufacturing and marketing fully 75 to 80 per cent. of the entire world's consumption of Carpet Sweepers. The foregoing statement is not made boastfully or egotistically, nor is it intended to show the brilliancy of our organization. What it intended is to demonstrate to you through facts and figures what I conceive to be the power of a well defined price maintenance policy, supported by strong advertising.

Jobbers and Retailers Willing to Co-operate.

And now I take it that a brief outline of our methods of price maintenance will be of interest to you. As we sell the jobber as well as the retailer, you will appreciate that the task of maintaining our prices is more complex and difficult of accomplishment than if we passed

our goods through but one channel of distribution. It should be gratifying to any manufacturer contemplating the adoption of a price maintenance policy, when I tell you that we have no great difficulty in obtaining the co-operation of both jobbers and retailers in the strict maintenance of our prices.

Policy Not Regarded with Favor at the Outset.

It is true that in the beginning, when the policy of restricting prices had been little advocated and when it was not generally understood, many dealers felt that it was a direct invasion of personal liberty and a positive usurpation of the dealer's prerogative to attempt to tell him the price at which he must sell a piece of merchandise which he had bought and paid for.

A Change of Sentiment.

Mark the change of sentiment on price maintenance. To-day we are having the loyal support and co-operation of all the best jobbing and retail trade in this and foreign countries; and right here I want to say that in my judgment there never was in the history of merchandizing a more opportune moment to inaugurate a price maintenance policy than the present. Price maintenance has been adopted by so many manufacturers during the past few years, and the principle has been so productive of good results, and has been approved so generally by the best jobbing and retail trade of the world, that I would strongly urge and recommend to any manufacturer who is producing an article of quality, protected by either patent or trademark, to lose no time in adopting a policy of restricted prices as far as this is possible in the conduct of his business.

Should Appeal to Every Manufacturer in a Position to Adopt It

This is the most wonderful age of merchandizing that the world has ever seen; never was competition as keen as it is to-day; never did the conduct of business demand a higher order of talent than to-day; and so, it seems to me, the policy of price maintenance should appeal to every manufacturer who can possibly adopt it, for its value to a business has been so many times demonstrated as to make it hardly debatable. Of course it is a fact with which you are all entirely familiar that the ideal condition necessary to the successful carrying out of a price maintenance policy is to have the article thus sold protected by patent or trademark.

Personally I am so thoroughly imbued with the benefits accruing from a policy of uniform prices, and knowing, as I do, what a small percentage of jobbers or retailers are disposed to cut prices, if I were manufacturing an article not protected by patent I would still surround the sale of my commodity with a well defined scheme of restricted prices, appealing to the best business judgment of the jobbers and retailers of the country to secure their co-operation in the maintenance of my prices.

I would supplement this with a campaign of advertising that would create a demand for my product and, by constantly pointing out to the jobber and retailer the profits to be secured by co-operation in the maintenance of prices, I would count upon results that are not obtainable when an article is sold on a haphazard plan, with no well defined selling policy back of it.

A carefully devised and rigidly enforced policy of price maintenance means lots of thought and hard work; but once it is properly launched, the work becomes comparatively easy, and the benefits accruing more than compensate for the labor expended.

Little Opposition Encountered from Buyers.

To demonstrate how thoroughly the trade now understand that the manufacturer of a patented article has the legal right to fix the price on his commodity, we have never once been obliged to go into the courts in this country to enforce the maintenance of our prices; and only a few cases have arisen where a dealer even threatened to cut our prices and take the matter to the courts in defiance of our policy.

A few years ago one of the largest department stores in Buffalo threatened to go into the courts in opposition to our policy and spend \$10,000 if necessary, to defeat us; but after they took time to investigate with their attorneys they concluded it was best not to go into litigation,

and to-day it is one of our best customers in Buffalo, and is selling our goods at correct prices.

Only recently one of the largest department stores in Chicago threatened to cut prices on our regular line of goods, if we would not agree to brand the goods specially for them, they to cut on the special brands. We discussed the question with them on the broadest lines we could command, politely refusing to accede to their request and giving them to understand that we would defend our policy of fixed prices to the last ditch, with the result that they receded from their position and will continue to sell our goods and maintain our prices.

Decisions Sustaining Manufacturers' Right to Fix Prices.

There have been some notable decisions during the past few years sustaining the right of the manufacturer of a patented article, to fix the price on his commodity.

We had occasion some time ago to proceed against an English merchant for cutting our prices and the court granted us an injunction, and the decision of the English Justice was most sweeping in the recognition it gave to the right of the manufacturer of a patented article to fix the price on his commodity.

The Ingersoll watch people, who maintain a policy of restricted prices, have had numerous decisions in their favor.

The two most notable decisions that I recall, and which have occurred recently, sustaining the right of the manufacturer of a patented article to fix his price, are those of the Victor Talking Machine Company vs. the Fair and the Dover Mfg. Company vs. the Fair. These cases were fought bitterly and carried to the Supreme Court, decisions being rendered favorable to the manufacturers.

Government Grants Patents to Stimulate Invention.

In all the decisions that have thus far been rendered the courts have made it perfectly clear that when the Government grants a patent it intends to do something more for the patentee than merely give him the exclusive right to make and vend his invention for a limited term of years. The only object that the Government has in granting patents is to stimulate invention for the general good, and there can be no stimulus to invention unless the inventor is able to enjoy some profit from his invention. If he cannot fix the price on his commodity, and if every jobber and dealer can cut the price, thus killing the demand for the article, it is evident that the patentee would be robbed of his profits, the very thing the Government expects him to enjoy when his patent is granted.

How It Works in Other Lines.

And now a word in regard to the effect of price maintenance on other lines. Consider the commercial standing of such products as the Knox and Dunlap hats; consider the prestige of the E. & W. collar—through their price maintenance policy. A notable example of the virtue of this policy is shown in our own city through the present status of the Macey Company. A few years ago this business was established by Fred Macey, a young man of unusual ability, but who in his ambition gave more thought to building up a business rapidly than safeguarding it through a carefully devised selling policy. Although Mr. Macey was a most skillful advertiser and although he made most marvelous strides within a short period in building up a business, things did not go right, and finally, when Mr. Macey died, Mr. Wernicke, the so-called father of the sectional bookcase idea, was called to take the management of the business, and in his reorganization of this business he put into effect price maintenance, and has rigidly adhered to this policy, with the result that while the business was in bad shape when he took hold of it, it is to-day in the healthiest kind of a condition, the preferred stock paying 6 per cent. and the common stock paying 10 per cent.

Manufacturers' Obligations.

The policy of price maintenance to be fairly and honestly carried out entails upon the manufacturer the same obligations to strictly maintain prices as it does upon the jobber or retailer. A salesman of ours would no more think of taking an order at a cut price than of

sending in his resignation. A manufacturer advocating price maintenance must practice what he preaches; he must keep faith with the jobbers and never take an order, however tempting, at cut prices. This policy has won for us the confidence and co-operation of the best jobbing trade in this country, and I can say in all candor that the time is past when we ever hear of a jobber cutting our prices.

Price Cutting Is a Species of Commercial Debauchery

that rests upon the relentless doctrine of the survival of the fittest, upon the narrow, cold-blooded principle that merchandizing is a sort of commercial warfare; that "all's fair in war" and "the devil take the hindmost." Price cutting lowers the commercial standing of the manufacturer, jobber or retailer who practices it, destroys profits, breeds distrust, fosters prevarication, forfeits confidence and, finally, robs the consumer by debasing the quality of the commodities upon which prices are cut, if not actually driving many of them from the market.

A Sound Principle.

In contradistinction to the blighting effect of price cutting price maintenance is in harmony with the soundest principles in business to-day. The manufacturer, jobber or retailer conducting his business under a broad, equitable system of uniform prices, commands confidence and respect, and establishes for a business that fine personality that we all prize so much in the individual.

The Banquet.

The banquet on Thursday evening was a more than usually attractive occasion owing to the presence of Dr. Frederick A. Cook, the Arctic explorer. In fact the event instead of being simply the annual banquet of the National Hardware Association was put forth as a testimonial dinner in honor of the explorer. Perhaps 600 persons, including a goodly proportion of ladies, sat down at the beautifully decorated tables. During the dinner a programme of 10 selections, given by the Favorita Concert Quartette, was very much enjoyed.

At the close of the dinner Robert M. Dudley, president of the National Hardware Association, who made a very efficient toastmaster, after a few felicitous remarks introduced Robert Garland, president of the American Hardware Manufacturers' Association, as the first speaker of the evening. Mr. Garland, who referred facetiously to the matter of private or manufacturers' brands at the Pole and the recent triumph of Pittsburgh in the race for the National League baseball pennant, spoke in part as follows:

President Garland's Remarks.

This being, as I understand it, a testimonial dinner to Dr. Cook, we Hardware people must get away from business and allow our minds to run in other channels. Some of us who have been attending strictly to business the last few days will appreciate the recreation.

Speaking of the search for the North Pole, I remember many years ago reading with the greatest interest a book, perhaps now out of print, which was entitled "The Realm of the Ice King"; and I read of Sir John Franklin, Kane and other Arctic heroes who risked their lives, suffering hardships and privations, in their endeavors to reach that point of high attainment, the North Pole.

It is a story common to all of us. Many have made the attempt, and every man who succeeded in getting any distance north in that "land of desolation" was certainly a hero, but it was left to our fellow American here to be the first to accomplish something that no other man of any country had succeeded in doing. The doctor may, therefore, be placed among the heroes of the world, and we are assembled here to do him honor. As Longfellow truly states:

*The heights by great men reached, and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night.*

Dr. Davies' Address.

Mr. Dudley next introduced the Rev. John R. Davies, D.D., of the Bethlehem Presbyterian Church, Philadelphia, who responded to "A Great Page in the World's History." Mr. Davies' address was an eloquent effort and was listened to with close attention and keen appreciation. He described the crude maps representing the world that existed in olden times and referred to the progress of discovery and the comparatively humble positions occupied by men who distinguished themselves in this direction. He compared their achievements and then pictured as the greatest discovery the one who discovers himself.

Dr. Cook's Story of the Pole.

Dr. Cook was then introduced and received an ovation. He bowed his appreciation and spoke as follows, in full:

Your industry was represented at the Pole. It is represented in every walk of life where work and brains count for success. The amount of Hardware on our sleds, however, does not promise a big business return for the future. There were Ice Plates, or Shoes for the Sleds; guns, Knives, Hatchets, Lamps, Aluminum Pails, Cups, Spoons—a complete list; weighed about 25 lb., but without them the Pole would have been impossible. To you gentlemen, therefore, who make these important wares, is due a part of the credit of the honor of success.

Polar Success Dependent on Food and Its Transportation.

Now, about our Polar campaign. The attainment of the Pole is dependent upon food and its transportation. No man has ever returned from the polar regions because he could not go further; because he was stopped by any physical barrier. No one has ever returned because the cold was too severe or the work too hard. It has always been the limit of food supply. If you can keep a man's stomach full you can send him over any part of the Arctic or Antarctic. The whole unknown area is open to him if you keep him supplied with food and transport that food. It is this peculiar problem which has been studied in our case. We have been introducing nothing very wonderful; we have had no great inventions to help us; we have used no condensed food that has not been used before.

Pemmican.

We simply took pemmican—dried beef and beef tallow. Instead of making it a part of our diet, part of our ration, as has been done by other men, it was with us practically the whole thing. Now, pemmican was first made by the buffalo hunting Indians. They dried the buffalo meat, pounded it, put it in skin bags, poured over it melted buffalo fat, sugar and currants; it is the original pemmican. We borrowed that same idea, but to-day we make it of beef and beef tallow. For the Arctic there is no other food to take its place. There is nothing also that will give the same amount of energy for given weight.

In the preparation of this pemmican nothing is removed but water. One pound of it is equal to 5 lb. of meat. It does not freeze. It has no water and therefore it cannot freeze. Fresh meat freezes hard, so hard that at a temperature of 40 degrees below zero it is difficult to break it with an axe. Pemmican will get hard, but it will not break the axe.

Started with Food for 80 Days.

Now, we started from a point 460 miles from the Pole with food for 80 days. I had two faithful companions, two young Esquimos. From that point we took 26 dogs. We carried on each sled 600 lb. We started over the Polar Sea. The ice at first was rather good. Passing over the eighty-third parallel it was much broken. Passing beyond the eighty-fourth we discovered new lands to the west, a land extending along the one hundred and second meridian. Between the eighty-fourth and eighty-fifth parallel the land seemed to be perfectly destitute, but we were a good ways from it. Then we continued

our northerly march. If we had stopped to explore this new land we never should have gone north, because that in itself is a season or several seasons' work. Beyond that we saw no land, no life, no icebergs. We traveled over a moving sea of ice, mostly large old fields, averaging from 1 to 3 miles in diameter, ranging in thickness from 10 to 50 ft. Our average distance was 15 miles a day; we camped at night in a snowhouse.

We Built a New Snow House or Igloo Every Night,

which took an hour or an hour and a half; got into our bags and ate our evening meal of pemmican, tea and an ounce of biscuit; slept 8 or 10 hours; awoke in the morning and had a breakfast just like our supper; two meals a day; we never stopped in the middle of a day for either food or drink. We walked. We never rode on the sleds except near the land. We walked until we could walk no more. Then we built another snowhouse. That was our usual routine.

Now we reached that point beyond 89.59, which is called the North Pole. We found nothing very wonderful there; no land; no life; nothing to mark the spot; the same moving sea of ice which we had crossed for 500 miles. The ice drifted southeast; some open spaces of water, but there was no material change from the ice which we had seen south of that.

Our determination for position was obtained by the use of the sextant and its accessories, measuring the altitude of the sun. By doing this I think we could place ourselves within a fraction of a mile—I think we can show that we have been inside of an area—a circle—1 mile in diameter, which is the North Pole. There is no little pivot there which you can trample down, and say: "This is the North Pole." With the crude instruments which we must necessarily carry for a sledge trip if we can map out, block out, a circular mile about the top of the globe, we are perfectly satisfied, and we spent two days to determine that point. We found no pole—no stick—to nail things to.

The Return from the Pole.

After our work was completed we turned our backs to the Pole and started home. In the long return trip we were carried west instead of east, south of the new land. We were cut off from our retreat and our individual line of caches and were unable to turn to Greenland. We did the next best thing and went south with the ice into the channels among the American Islands, hoping to reach a whaler in Lancaster Sound, which we intended to board and go home during October of last year. In this we failed. Unable to find food, unable to get through to Wellington Sound, we moved into Jones' Sound, and there we had a long battle for life, for fat and food to keep us alive. During last winter we lived in an underground den. We ate musk ox and burned musk ox fat.

A Tin Plate Serves as a Stove.

We made a stove by cutting a tin plate in two, two half tin plates, using moss as a wick. This served as our stove for that long winter night. At the end of the night the plates were nearly burned, but we managed to keep comfortable and well through that night, and after that, after another long drag, we finally reached the coast of Greenland. There for the first time in 14 months we saw human life; saw the Esquimos and they saw us. They hitched up their dogs. They came out to greet us. It was there that I met the young American sportsman, a young man whom I have since been proud to know, Harry Whitney.

Credit for the Expedition.

You have heard the rest of this story. Now, before sitting down I want first to say that a large part of the credit of this expedition belongs to the man who paid the bills, John R. Bradley of New York. After that the honor belongs to that little tribe of savage people who live farthest north. It

is to their intelligence and their unlimited endurance that the polar conquest was successful. Without them it would be a hopeless task. Those two young men, Etukishuk and Akwelah, the two boys who followed me from beginning to end, did so not for honor—I believe they do not understand that; not for money—money is no use there. They were promised Hardware. They were promised a knife and a gun for this work; but it was not that that attracted them; they were really and honestly interested in the game and they followed because of the desire to be helpful and friendly.

Hardware the Money of the Farthest North.

When I returned to Greenland I of course turned over to these young men all of my Greenland possessions, which were mostly in the shape of Hardware—Guns, Knives, Needles, Thimbles, Sled Runners and Sled Shoes, and a certain amount of wood, a house and provisions. Hardware is the money of these people of the farthest north.

Now, ladies and gentlemen, I thank you for this cordial reception. I thank you for the enthusiasm which you have shown, coming as it does from a group of business men and their wives. I regard this indorsement as one of the highest honors which I have received.

National Board of Trade's President Pleads for a Merchant Marine.

Frank D. La Lanne, president of the National Board of Trade was the next speaker, his toast being "Our Nation's Commerce." Mr. La Lanne's address was a forceful appeal for a merchant marine. He said that under a wise bill like Senator Gallinger's, carrying an appropriation of three to five millions of dollars, a large part of the one hundred and fifty millions of dollars annually paid to foreign ships for freightage would be saved. An adequate subsidy would not go to enrich the shipowner, but would simply equalize the difference between the wages paid to sailors and mechanics of other nations and the higher wages paid on this side of the Atlantic.

A Resolution Endorsing Doctor Cook.

At the close of Mr. La Lanne's address T. James Fernley, secretary of the National Hardware Association, read the following resolution:

Whereas, The members of the National Hardware Association and the American Hardware Manufacturers' Association and representatives of trade and commercial organizations from all parts of this country, assembled at a testimonial banquet tendered Dr. Frederick A. Cook, have listened with great interest to the recital of his discovery of the North Pole; and

Whereas, We believe such an achievement under such perilous circumstances will be of untold benefit to the commerce of America, and indeed to the entire world; and

Whereas, We believe that such an accomplishment should not pass into history without some record of its appreciation on the part of the commercial interests which we represent, therefore,

Resolved, That we express our entire confidence in Dr. Frederick A. Cook and offer him our most hearty congratulations as well as sympathy in certain attacks which have been made upon him.

We sincerely hope that the people of this country will at least show the same confidence and esteem in one of their own countrymen as has been evidenced by that of other nations.

While the resolution was carried without a dissenting voice, it was remarked that a good many refrained from voting.

Other Addresses.

The closing address on the programme was by the Hon. J. J. Sullivan, ex-United States District Attorney, Cleveland, Ohio, who eloquently touched on the trials and privations endured by Dr. Cook in his march to the pole, and said that love for his wife and family and their prayers at home had had much to do with his success. He also enforced the lesson of patience and perseverance taught by the exploit.

A short informal address by Mayor Stoy, of Atlantic City, brought the evening's exercises to a close.

Governor Fort's Address.

An informal address was made by Governor Fort of New Jersey to the members of both associations at the close of the morning sessions on Thursday. Mr. Fort called attention to the development of inland waterways along the Atlantic Coast, and, referring to the part that business men should play in public affairs, continued as follows in part:

There is nothing so important to a man in public life as a representative body of men like you. If I could only make the men of America, and you represent this nation, largely feel and appreciate, as a man in office feels and appreciates, the influence and the power of the man of affairs, it would be a great thing to accomplish for the public welfare.

Dangerous Lack of Interest.

The difficulty with our Government to-day, if there be any difficulty, is the lack of interest which men like you take in public affairs. The indifference of the man of means, if you like, the man of business and the man of intelligence, in the life of this nation, is the danger in this nation, if there be any danger in the Republic. We are prone in our time and in our day, many of us, to criticise men who are influential in political affairs, if you will allow me to make that statement without partisan thought—men whom we call leaders in political affairs.

I apprehend that most of us are responsible for the conditions which that character of leadership portrays, and which you are constantly criticising simply because of the indifference of men like the gentlemen who are here before me to-day; and if we would, all of us, who are interested in the Republic and in the advancement of its industrial prosperity, take the same interest in political affairs that we do in our business, there would be no trouble about conditions; you would hear nothing about graft or anything of that character—not for a single moment.

Convention Notes.

The arrangements for the banquet were admirable and notwithstanding the large assemblage every one found his or her place without confusion or delay. The onerous duties connected with the assignment of tickets and seats were most efficiently looked after by E. C. Griswold of the Corbin Cabinet Lock Company, Philadelphia, and his associates.

The entry of Dr. Cook during the joint executive session on Thursday afternoon was a spectacular affair and caused a sensation. He was escorted by Mayor Stoy and the Atlantic City troop, the latter being in gorgeous uniforms. The explorer remained but a few moments after his introduction, it being explained that he would reserve his remarks until the banquet in the evening.

A reception and dance in the beautiful ballroom of the Blenheim was tendered by the American Hardware Manufacturers' Association on Wednesday evening. It was largely attended and a most enjoyable occasion, and the committee in charge are to be congratulated on its success.

N. A. Gladding of E. C. Atkins & Co. has usually been present at the national conventions, being actively interested in the work of the Manufacturers' Association and having a wide acquaintance with both manufacturers and jobbers. He was, therefore, missed by many from the Atlantic City gathering, being on the Pacific Coast on business. A telegram was sent him expressing regret at his absence, to which he made a happy reply by wire.

The Utica Improved Lawn Trimmer.

The Utica Lawn Trimmer Company, Utica, N. Y., has improved its lawn trimmer by placing the cutter bar ahead of the wheel and increasing the cut from 4 in. to 5

in. The spring shoe of last year for sliding along the ground has been replaced by a small wheel which makes the trimmer easier to handle.

Holdfast Clinching Nails.

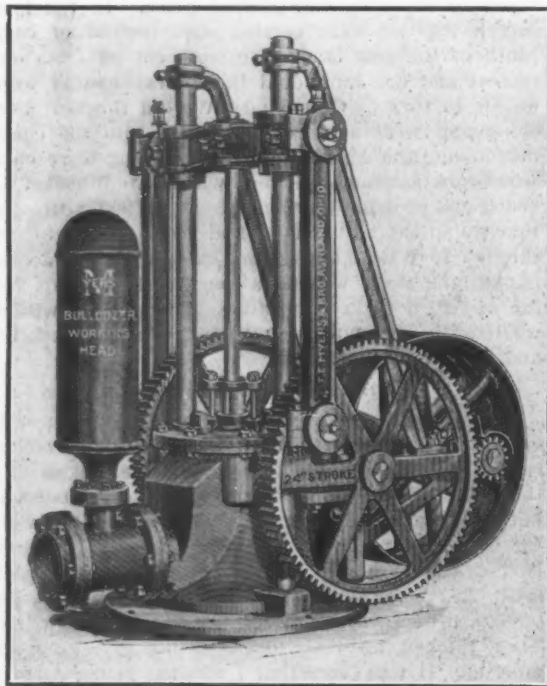
Charles F. Baker & Co., 48 Lincoln street, Boston, Mass., manufacturers of Baker's Holdfast patent wire clinching nails, having a peculiar oval, awl shaped, clinching point, which turns back into the insole of a shoe, thus making a secure fastening, have supplemented the line by the addition of brass plated and brass nails, where formerly only iron were made. The brass plated are made in No. 17 wire, 2½-8 to 6-8 in. long, and No. 16 wire, 3-8 to 8-8 in. long. The brass nails are of No. 18 wire, 3-8 to 6-8 in.; No. 17 wire, 2½-8 to 6-8, and No. 16 wire, 3-8 to 8-8 in. long.

Ely's Double Jointed Steel Ice Tongs.

The E. C. Ely Company, Troy, Pa., has added to its line of forged steel handled, double jointed steel ice tongs four sizes, Nos. 1 to 4, to open 20, 22, 24 and 28 in., respectively; also tongs with steel handles and wood grips, to open 20 and 22 in. The jaws, or arms of the tongs, are made of steel, highly carbonized, to make them stiff and admit of their being tempered to any degree of hardness. The company remarks that either of the four larger sizes are adapted for hoisting barrels of goods weighing 400 to 500 lb.

Myers Bulldozer Power Working Head.

The bulldozer power working head, illustrated herewith, and manufactured by F. E. Myers & Bro., Ashland, Ohio, is designed especially for pumping purposes. The makers claim for it a wide range, being adapted to wells of great depth and equally efficient in delivering water to high elevations, all of which requires a construction of great strength in all its parts and arranged carefully with regard to endurance when kept in continuous use. It is explained that the device for a pump has such



Myers Bulldozer Power Working Head.

construction that the several parts may be readily removed to permit access to the interior of the head, whereby the working parts may be removed without disconnecting the discharge pipe from the base, without loosening the fastenings that secure the base to the plat-

form or other supporting structure, and without disconnecting the driving mechanism. The construction admits of a very short base, so the operating mechanism is located close to the supporting surface, being simple in construction and operation. The power is applied close to the base, and bronze boxes operate on the wrist pin and crosshead pin. The entire machine is self-contained, complete within itself, so that it is only necessary that the base be properly fastened to the platform when it is ready for operation. The working head can be furnished with a balance wheel, differential and air chamber; has a 24-in. stroke, and is especially designed for heavy duty.

Coldwell Lawn Trimmer.

The Coldwell Lawn Mower Company, Newburgh N. Y., has placed on the market the Coldwell lawn trim-

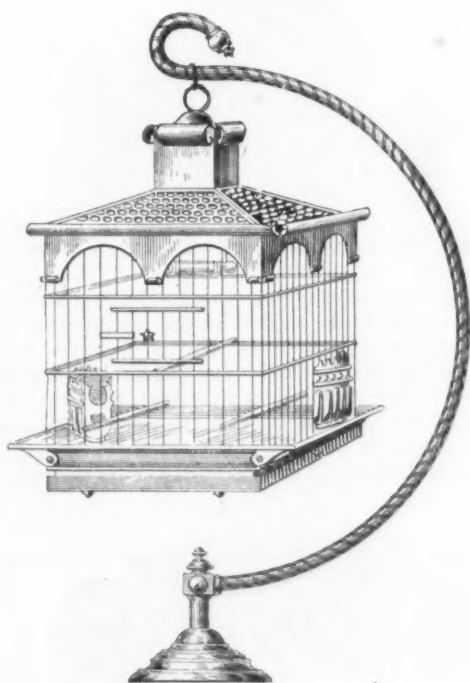


Fig. 1.—Cage Stand, No. 5, 28 In. High, for Placing on a Table.



Fig. 2.—Cage Stand No. 3, Adjustable to Hold Any Size of Square Cage.



Fig. 3.—Cage Stand No. 4, Adjustable to Hold Canary, Parrot or Robin Cages of Any Size.

mer, an important feature of which is the ball bearing adjustment. This is accomplished by a single screw; a locking screw holding the bearings securely in place

ornamental post of Fig. 3. The thumb screw on the support of the wings will regulate the extension of them, so that any square cage, be it canary, parrot or robin, will be safely held by the two wings, whether plain or molded bottom. The stand shown in Fig. 2 is 3 ft. 9 in. high, and the one illustrated in Fig. 3 is 4 ft. high.

Motor Driven Wall Paper Trimmers.

The application of power of a small electric motor to operate a hand wall paper trimmer, manufactured by A. Allen & Co., 2001-2005 Carpenter street, Philadelphia, Pa., has increased the usefulness of the machine. The construction is such that the operator has full control of the machine, being able to start and stop instantly, to go slow or fast, the only effort required being a pressure of the foot. This permits free use of both hands by the operator. It is pointed out that the user can turn out double the work in the same time with greater ease, and that the cost of power is small, as the Westinghouse motor is but $\frac{1}{4}$ hp.

The Yankee Double and Single Speed Breast Drills.

The North Brothers Mfg. Company, Philadelphia, Pa., is putting on the market the Yankee double and single speed breast drills. The peculiar feature of both drills pertains to the shifter on the cylinder between the small gears. The change of the shifter to the various notches



The Coldwell Lawn Trimmer with 8-In. Wheel, Cutting an 8 In. Swath.

and in such manner as to prevent getting out of adjustment. The trimmer cuts an 8-in. swath, has an 8-in. drive wheel, a laid steel bottom knife and is attractively finished in aluminum and gilt.

causes the tool to produce different movements. Set in the first notch nearest the chuck makes it an ordinary or plain breast drill. At the second notch it becomes a left hand ratchet useful in removing taps, but especially to loosen the drill if it becomes jammed in a hole and cannot be moved forward or the crank revolved backward. Using the third notch changes it to a right hand ratchet. When in the fourth notch any movement of the crank, however short, or turned continuously in either direction, or a combination of the two, the drill in the chuck will always turn to the right and drill continuously. Hence, it is explained, no time is lost and double the work is done as compared with a single or right hand ratchet. This peculiar movement is obtained through a more extended combination of pawls and ratchets than used in the company's other Yankee tools. This exceptional movement is positive in action, and not likely to get out of order, it is said. In the fifth notch the spindle is locked tight so that the drill chuck may be rapidly opened or closed. The change of speed on the No. 555 double speed drill, Fig. 1, is made by pushing the little lever at the hub of the crank toward the gear for fast, and away from it for slow speed. This is done in the fractional part of the revolution and at any time, even while drilling, without removing the tool from the work, and in connection with any of the various movements of the shifter already described. The convenience of this is apparent when using the fast speed in drilling, to slow up in going through castings or running against hard spots. The side handle of the drill can be unscrewed, and has on it a screwdriver bit to take care of all the screws on the tool. The breastplate may be adjusted to right angle of the position shown in the illustrations, and thus permit the tool to be used close against partitions or in corners. The adjustable ball bearings in

gears have teeth cut from solid stock so as to run smoothly and accurately. The tools are finished in a dead black. The company alludes to it as essentially a machine shop tool, adding that the various advantages will be appreciated outside of shops wherever a breast drill is used; also that in many places for lighter work it will be even more convenient than a bit brace.

Hy-Grade and Hy-Spede Roller Skates.

John Jay Young, 155-157 Waverly place, New York, has recently made several improvements in his Hy-Grade and Hy-Spede roller skates. A feature which will appeal to the user is the steel renewable rim or tire, $\frac{5}{8}$ in. wide, which may easily be replaced when worn through. This keeps the wheel bodies practically intact for indefinite use where the wear is greatest, as all the parts are

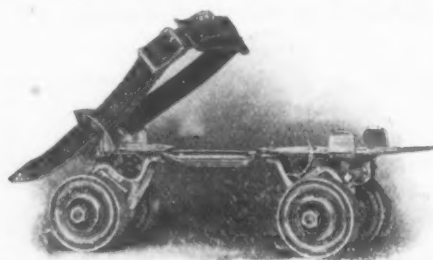


Fig. 1.—Hy-Grade Rink Roller Skate, Men's Model.

interchangeable and the rims go on friction tight. The hubs are turned from solid steel stock and case hardened. The cups are uniformly true and have three point bearings, as in bicycle hubs. As shown in Fig. 4 the steel shoe or tire is made in a special machine, which shaves an inner layer of steel on the interior from both ends and flanges it at right angles, so that being a part of the rim itself there is no possibility of its loosening or

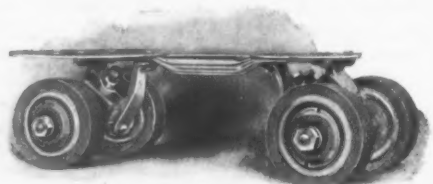


Fig. 2.—No. 999 Hy-Grade Racer Skate.

creeping, thus forming a solid, spring like and homogeneous foundation for seating the cups on each side and keeping them true. The steel balls are imported and of the highest grade. The connection between front and rear wheels is now tubular, with 1-in. adjustments, there being an extension of from 9 to 10 in. and 10 to 11 in. In the men's models, with a range from $8\frac{1}{2}$ to $9\frac{1}{2}$ in. and 9 to 10 in. in women's models. Where one piece frames are wanted for fitting to any particular foot they can be supplied, this construction being specially designed for even greater strength, rigidity and light weight. The cups in which the underbody rubber cushions are held are now made of cast aluminum, which, while affording

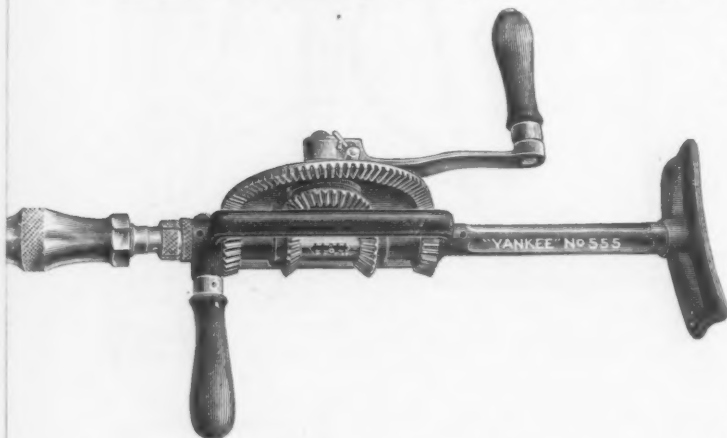


Fig. 2.—No. 999 Hy-Spede Racer Skate.

the spindle takes up the strain or thrust and relieves the other parts. Any lost motion can be readily taken up by the adjustment provided. The chuck is of new design and will hold accurately and securely with two jaws, either square or round shank drills or other tools up to $\frac{1}{2}$ in. A hexagon end of the shell of the chuck permits the use of a monkey wrench for tightening large drills, instead of holding the chuck shell injuriously in a vise.

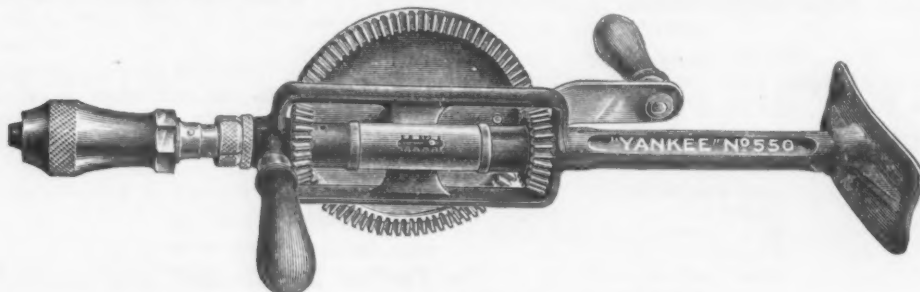


Fig. 2.—The Yankee Single Speed Breast Drill No. 550.

The chuck will hold any tools that can be held in the chuck of a bit brace, such as screwdriver bits, countersinks, rose bits, etc. The frames of the drills are malleable iron, the spindle of steel, turned and fitted, and the

necessary strength, decreases the weight. In each wheel truck are two hexagon head screws, with hexagon head set nuts by which to exactly regulate the adjustment for individuals varying greatly in weight and also to compen-

sate for wear. The rubber cushions are generous in size and of good quality, the truck being strongly pivoted and held with a cotter pin, the hanger carrying the 5-16 in. wheel axles. Figs. 1 and 3 illustrate the men's and

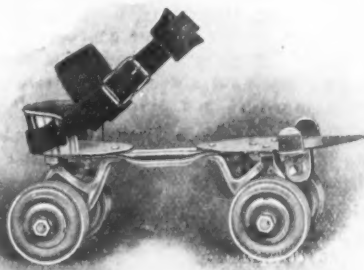


Fig. 3.—Hy-Grade Rink Skate for Women, with New Leather Ankle Support.

women's models in the Hy-Grade rink skates. Fig. 2 reproduces the No. 999 Hy-Spede racer skates for screwing solidly to the shoe sole, which is made with rigid tubular

frames only. In this skate wood wheels are used and are renewable, having a wider tread and more material. The wheels are turned from dogwood, boxwood and quebraco or iron wood. In the latter material there is a

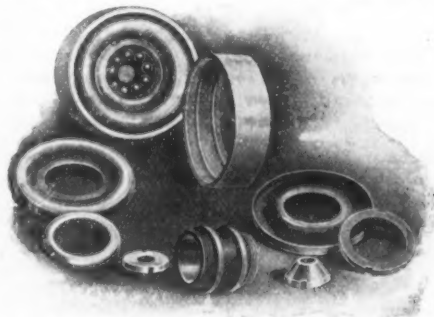


Fig. 4.—Construction and Parts of Wheel.

considerable natural oil, often used in tanning, but which in the skate wheel causes it more effectually to cling to the floor in skating. The skates are finely polished and nickel plated.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	gal.	bb.	lots
Linseed, Western, Raw.....	60	@61	
State, Raw.....	60	@61	
City, Raw.....	61	@62	
Boiled, 1¢ gal. advance on Raw.....	75	@	
Raw, Calcutta, in bbls.....	98	@100	
Lard, Prime Winter.....	59	@60	
Extra No. 1.....	50	@52	
No. 1.....	50	@52	
Cotton-seed, Crude, l.o.b. mill.....	5.60	@6.00	
Summer, Yellow, prime.....	6 1/2	@ 6 1/2	
Summer, White.....	6 1/2	@ 7 1/2	
Yellow, Winter.....	7 1/2	@ 7 1/2	
Tallow Oil, Acidless.....	57	@	
Menhaden, Brown, Strained.....	30	@31	
Northern, Crude.....	24	@	
Southern.....	24	@	
Light Strained.....	30	@31	
Bleached Winter.....	32	@	
Extra Bleached Winter.....	34	@	
Cocunut, Ceylon.....	8	@	
Cochin.....	8	@	
Cod, Domestic, Prime.....	38	@	
Newfoundland.....	40	@42	
Red Elaine.....	48	@51	
Saponified.....	6	@ 7 1/2	
Olive, Yellow.....	30	@	
Neatsfoot, Prime.....	58	@62	
Palms, Lagos.....	6 1/2	@	

Mineral Oils—

Black, 29 gravity, 25¢ cold test.....	12 1/2	@13
29 gravity, 15 cold test.....	13	@13 1/2
Summer.....	12	@12 1/2
Cylinder, light filtered.....	29	@20 1/2
Dark, filtered.....	17 1/2	@18
Paraffine, 903-907 sp. gravity.....	14	@14 1/2
903 sp. gravity.....	13	@13 1/2
903 sp. gravity.....	10 1/2	@11
Red.....	13	@13 1/2

Miscellaneous—

Barites:		
White, Foreign.....	ton	\$18.50@20.50
Amer., flatted.....	ton	17.00@18.00
Off color.....	ton	12.50@15.00
Chalk in bulk.....	ton	3.00@3.40

China Clay, Imported.....	ton	11.50@18.00
Cobalt, Oxide.....	100 lb.	1.15@2.00
Whiting, Commercial.....	100 lb.	15¢@59
Gilders.....	100 lb.	.52¢@.64
Ex. Gilders.....	100 lb.	.56¢@.68

Putty, Commercial—

In bladders.....	\$1.70@2.00
In bbls. or tubs, 100 lb.....	1.20@1.45
In 1 lb to 5 lb tins.....	2.60@3.25
In 12 1/2 to 50 lb tins.....	1.50@1.90

Spirits Turpentine—

In Oil bbls.....	59 1/2	@60
In Machine bbls.....	60	@60 1/2

Glue—

Cabinet.....	12	@15
Common Bone.....	7 1/2	@ 9
Extra White.....	18	@24
Fish, liquid, 50 gal. bbls., per gal.....	60	@120
Foot Stock, White.....	12	@14
Foot Stock, Brown.....	9	@11
German Common Hide.....	10	@12
German Hide.....	12	@18
French.....	10	@40
Irish.....	13	@16
Low Grade.....	10	@12
Medium White.....	14	@19

Gum Shellac—

Bleached, Commercial.....	16	@17
Bone Dry.....	20	@21
Button.....	20	@30
Diamond.....	20	@21
Pine Orange.....	20	@21
A. C. Garnet.....	17	@18
Light Orange.....	17	@19
Kala Button.....	13	@15
O. C.....	25	@26
Octagon B.....	22	@23
T. S.....	14 1/2	@16
V. S. O.....	24	@25

Colors in Oil—

Black, Lampblack.....	12	@14
Blue, Chinese.....	36	@46
Blue, Prussian.....	32	@36

Blue, Ultramarine.....	13	@16
Brown, Vandyke.....	11	@14
Green, Chrome.....	12	@16
Green, Paris.....	12	@24
Sienna, Raw.....	12	@12
Sienna, Burnt.....	12	@15
Umber, Raw.....	11	@14
Umber, Burnt.....	11	@14

White and Red Lead, &c.—

Lead, English White, in Oil.....	9 1/2	@ 9 1/2
Lead, American White.....	9 1/2	@ 9 1/2
Dry and in Oil, 100, 250 and 500 lb kegs.....	6 1/2	@
Dry and in Oil, 25 and 50 lb kegs.....	7	@
Dry and in Oil, 12 1/2 lb kegs.....	7 1/2	@
In Oil, 25 lb tin pails.....	7 1/2	@
In Oil, 12 1/2 lb tin pails.....	7 1/2	@
In Oil, 1, 2, 3 and 5 lb tin cans, ass't.....	8 1/2	@
Red Lead and Litharge:		
In 100 lb kegs.....	7	@
In 25 and 50 lb kegs.....	7 1/2	@
In 12 1/2 lb kegs.....	7 1/2	@
In lots of less than 500 lbs.....	1 1/2	@
1 1/2¢ lb advance over above prices of White and Red Lead and Litharge.		
Lead, American, Terms: On lots of 500 lbs and over 60 days, or 2% for cash if paid in 15 days from date of invoice.		

Zinc, Dry—

American, dry.....	5 1/2	@ 5 1/2
Red Seal (French process).....	6 1/2	@ 7
Green Seal.....	7 1/2	@ 7 1/2
German Red Seal (French process).....	7 1/2	@ 7 1/2
Green Seal.....	7 1/2	@ 8
White Seal.....	8 1/2	@ 9
French, Red Seal.....	7 1/2	@ 8 1/2
Green Seal.....	10	@10 1/2

Dry Colors—

Black, Carbon.....	5	@10
Black Drop, American.....	3 1/2	@ 8

Black Drop, English.....	5	@15
Black, Ivory.....	16	@20
Lamp, commercial.....	3	@ 5
Blue, Celestial.....	4	@ 6
Blue, Chinese.....	39	@31
Blue, Prussian, Domestic.....	28	@30
Blue, Ultramarine.....	5	@15
Brown, Spanish.....	1 1/2	@ 1
Carmine, No. 40.....	2.65	@2.75
Green, Chrome, ordinary.....	3 1/2	@ 5
Green, Chrome, pure.....	17	@25
Metallic Paint, ton.....		
Brown.....	\$16.50	@22.00
Red.....	\$11.00	@18.00
Ocher, American.....	ton	\$12.00@15.00
American Golden.....	1	@ 5
French.....	14	@ 2
Foreign Golden.....	3	@ 4
Orange Mineral, English.....	10	@12
French.....	12 1/2	@13
German.....	12	@13
American.....	8 1/2	@10
Red, Indian, English.....	5	@ 7
American.....	3	@ 3 1/2
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb	\$9.75@1.50
English.....	100 lb	\$1.15@1.60
Sienna, Italian, Burnt and Powdered.....	3	@ 9
Italian, Raw, Powdered.....	3	@ 7
American, Raw.....	2 1/2	@ 3
American Burnt and Pow'd.....	2 1/2	@ 3
Talc, French.....	30 ton	\$18.00@25.00
American.....	ton	15.00@25.00
Terra Alba, French.....	100 lb	.80@1.00
English.....	100 lb	.90@1.00
American.....	100 lb, No. 1.....	.75@.80
American.....	100 lb, No. 2.....	.80@.85
Umber, T'key, But. & Pow.....	2 1/2	@ 3
Turkey, Raw and Powdered.....	2	@ 2 1/2
Burnt, American.....	2	@ 2 1/2
Raw, American.....	2	@ 2 1/2
Yellow, Chrome, Pure.....	12 1/2	@13
Oxide Red, American.....	2	@ 7 1/2
Vermilion, English, Imported.....		@70
Chinese.....		\$0.90@1.10

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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General Goods.—Goods which are made by more than one manufacturer are printed in *Italics*. The prices named represent those obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are usually given to larger buyers.

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Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 1/4 @ 33 1/4 & 10% signifies that the price of the goods in question ranges from 33 1/4 per cent. discount to 33 1/4 and 10 per cent. discount.

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Taplin's Perfection 25%

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Anvils—American—

Eagle Anvils 10%
Hay-Budden, Wrought 10%
Trenton 10%

Imported—

Swedish Solid Steel Paragon, 1/2 lb. 10%
Peter Wright & Sons, 1/2 lb. 84 to 349 lb. 10%
350 to 600 lb. 11%.

Anvil, Vice and Drill—

Millers Falls Co., \$18.00 15% & 10%

Augers and Bits—

Com. Double Spur 30%
Jennings' Patn., Bright 65 & 100 70%
Black Lip or Blud. 65 & 100 65%
Boring Mach. Augers 70%
Car Bits, 12-in. twist 40% & 10%
Ford's Auger and Car Bits 40% & 5%
Ft. Washington Auger Co. 35%
Forsner Pat. Auger Bits 25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list 25% & 7%
No. 30, R. Jennings' list 50%
Russell Jennings 25% & 13% & 2%
Mayhew's Countersink Bits 45%
Pugh's Black 20%
Pugh's Jennings' Pattern 20%
Snell's Auger Bits 60% & 10%
Snell's Bell Hangers' Bits 60%
Snell's Car Bits, 12-in. twist 60%
Snell's King Auger Bits 50%
Snell's Star Auger Bits 50% & 10%
Swan's Auger Bits 65% & 10% & 70%
Swan's Jennings' Pattern 50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Ford's, Clark's Pattern 66% & 2%
C. E. Jennings & Co., Steer's Pat. 25%
Lavigne Pat., small size, \$18.30; large size, \$20.00 60% & 10%
Swan's 60%

Gimlet Bits—

Common Dbl. Cut \$3.00 @ \$3.25
German Pattern, No. 1 to 10, \$4.75; 11 to 13, \$5.25

Hollow Augers—

Bonney Pat., per doz. \$1.50 @ 6.00
Ames 20% & 10%
Universal 20%

Ship Augers and Bits—

Ship Augers 40% & 10% & 50%
Ford's 33% & 5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Watrous' 33% & 7%
Snell's 50%

Awls—

Elmore Tool Mfg. Co.:
Timers' and Brad Awls 35% & 7%
Scratch Awls 60%

Axes—

Single Bit, base weights: Per doz.
First Quality \$4.75 @ \$5.00
Second Quality \$4.25 @ \$4.50
Double Bit, base weights:
First Quality \$7.00 @ \$7.50
Second Quality \$6.50 @ \$7.50

Axles—

Concord, Loose Collar 4 1/4 @ 4 1/2
Concord, Solid Collar 4 1/4 @ 5
No. 1 Common, Loose 3 1/4 @ 4
No. 1 1/2 Com., New Style 4 1/4 @ 4 1/2
No. 2 Solid Collar 4 1/4 @ 4 1/2
Half Patent:
Nos. 7, 8, 11 and 12 70%
Nos. 13 to 14 70%
Nos. 15 to 18 70% & 10% & 70% & 10% & 65%
Nos. 19 to 22 70% & 10% & 70% & 10% & 65%

Boxes, Axes—

Common and Concord, not turned 10%
Common and Concord, turned, 10%
Half Patent 10% & 10% & 10%

Bait—

Hendryx:
A Bait 30%
B Bait 25%
Competitor Bait 20% & 5%

Fishing—

Balances—

Caldwell new list 50% & 10%
Pulman 50% & 10%

Spring—

Light Spring Balances 50% & 10% @ 60%
Chatillon's:
Light Spg. Balances 50% & 10% @ 60%
Straight Balances 40% & 10% @ 50%
Circular Balances 50% & 10% @ 60%
Large Dial 30% & 10% @ 10%

Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 30 lb. per lb. 2 1/4 @ 3 1/2

Prying and Pinch—

Elmore Tool Mfg. Co. 75%

Towel—

No. 10 Ideal, Nickel Plate, 1/2 gro. \$8.50

Beams, Scale—

Scale Beams 40% & 10%
Chatillon's No. 1 30%
Chatillon's No. 2 40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.80;
Tinned \$0.85
No. 11 Wire Coppered 1/2 doz. \$1.15;
Tinned \$1.25
No. 10 Wire Tinned 1/2 doz. \$1.50

Beaters Egg—

Dover Stamping & Mfg. Co.:
Genuine Dover, per gro. No. 1, Tumbler Size, \$7.50; No. 2, Family Size, \$7.50; No. 3, Extra Family Size, \$24.00; No. 4, Hotel Size, \$30.00.

Holt-Lyon Co.:
Holt, per doz. No. 5, Jap'd. \$0.80;
No. A, Jap'd. \$1.15; No. B, Jap'd. \$1.85; No. 6, Jap'd. \$1.65.
Lyon, Jap'd, per doz. No. 2, \$1.35.
Taplin Mfg. Co.:
Improved Dover, per gro. No. 60, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd. \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd. \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd. \$9.50; No. 300, Mammoth, per doz., \$25.00.

Bellows—

Blacksmith Standard List:
Split Leather 60% & 10%
Grain Leather 50% & 10%

Hand—

Inch. 6 7 8 9 10
Doz. \$4.50 5.50 6.00 7.00 7.50

Molders—

Inch. 10 12 14 16
Doz. \$8.50 11.00 13.50 14.50

Bells— Cow—

Wrought Cow Bells 75%
Jersey 75% & 10%
Texas Star 50%

Door—

Reading Hardware Co. 50%
Home, R. & E. Mfg. Co.'s 55% & 10%

Hand—

Polished, Brass 60% & 10% & 10%
White Metal 60% & 10% & 10%
Nickel Plated 50% & 10%
Sirtsa 50% & 10%

Miscellaneous—

Farm Bells 2 1/2 @ 3 1/2
Church and School 60% & 10% & 5%

Belting— Leather—

Extra Hvy. Single and Dble. 55%
Heavy, Single and Double 60%
Medium, Single and Double, 60% & 10%
Light, Single and Double, 60% & 10% & 10%
Shoulder, Single and Double 75%
Standard 70% & 10%
Cut Leather Lacing 50%
Leather Lacing Sides, per sq. ft. 23%

Rubber—

Competition (Low Grade), 70% & 10% @ 75%
Standard 60% & 10% @ 70%
Best Grades 50% & 10% @ 70%

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1909 list:
Chain, Parts, Spokes 50%
Tubes 60%

Blocks Tackle—

Common Wooden 75% @ 75% & 10%
Lane's Patent Automatic Lock and Junior 30%
See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined 50% & 10% @ 60%
Embossed 50% & 10% @ 60%

Bobs, Plumb—

Keuffel & Esser Co. 33% & 10%

Belts

Carriage, Mach' e, &c,—

Common Carriage (cut thread):
3/4 x 6 and smaller 70% & 12 1/2 @ 70%
Larger and longer 65% & 10%
Common Carriage (rolled thread):
3/4 x 6, smaller and shorter, 75%
Phila. Eagle, \$3.00 list 80%
Bolt Ends, with C. & T. Nuts, 65% & 10%

Machine (Cut Thread):
3/4 x 4 and smaller 75%
Larger and longer 70%

Door and Shutter—

Wrought Iron:
Wrought Barrel Japanned,
Barrel Bronzed 60% & 10% @ 85%
Spring 70% & 10% @ 80%
Square Neck 75% & 10% @ 80%
Square 80% & 10% @ 10%
Ives' Mortise Door 25%
Ives' Wrought Door 25%

Expansion—

F. H. Evans' Crescent 40% & 10%
Richards Mfg. Co. 55% & 10%
Star Expansion Bolt Co.:
Star, Lag Screw Type 60% & 10% & 5% & 2 1/4%
Star,

Calks, Toe and Heel—

Blunt, 1 prong, per 100 lb. \$3.50 @ \$3.85
 Sharp, 1 prong, per 100 lb. \$4.00 @ \$4.35
 Burke's, 1 pr. Blunt Toe, 3/4¢; 2 pr. Blunt Toe, 4/4¢; 1 pr. Sharp Toe, 4/4¢; 2 pr. Sharp, 4/4¢; Blunt Heel, 4/4¢; Sharp Heel, 4/4¢
 Perkins', Blunt, 1 lb. 3.85¢; Sharp, 4.15¢

Caps— Primers—

Berdan Primers, \$2 per M. 20¢5
 Primer Shells and Bullets. 15¢10
 All other primers per M. \$1.52 @ \$1.60

Cartridges—

Blank Cartridges:
 32 C. F., \$5.50.....10¢5
 38 C. F., \$7.00.....10¢5
 22 cal. Rim., \$1.50.....10¢5
 32 cal. Rim., \$2.75.....10¢5
 B. B. Caps, Con. Ball, Suedg. \$1.90
 B. B. Caps, Round Ball.....\$1.19
 Central Fire.....25¢
 Target and Sporting Rifle, 15¢5
 Primed Shells and Bullets, 15¢10
 Rim Fire, Sporting.....50¢
 Rim Fire, Military.....15¢5

Castors—

Bed.....65¢10 @ 70¢
 Plate.....60¢10 @ 70¢
 Philadelphia.....70¢10 @ 75¢
 Gem (Roller Bearing).....70¢10 @ 10¢5
 Steel Gem (Roller Bearing).....70¢
 Standard Ball Bearing.....45¢
 Yale (Double Wheel) low list.....40¢10

Chain, Proof Coil—

American Coil, Straight Link:
 3-16 1/4 5-16 3/4 1/2 3/4
 \$7.70 5 05 4.10 3.50 3.35 3.25
 1/2-1 1/4 to 1 1/2 inch.
 \$3.15 3.25
 German Coil.....70¢5
 German Pattern Coil:
 6-0 to 1.....70¢10 @ 75¢
 2 and 3.....60¢10 @ 70¢
 4, 5 and 6.....50¢10 @ 60¢5

Halter—

Halter Chains.....60¢5 @ 60¢10
 German Pattern Halter Chains,
 list July 24, '97.....70¢5
 Covert Mfg. Co.:
 Halter.....30¢10 @ 10¢

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
 6 1/2-6-3, Straight, with ring, \$26.00
 6 1/2-6-2, Straight, with ring, \$27.00
 6 1/2-8-2, Straight, with ring, \$30.00
 6 1/2-10-2, Straight, with ring, \$33.00
 NOTE.—Add 2¢ per pair for Hooks
 Twist Traces: add per pair for Nos. 2 and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of Straight Link.
 Eastern Standard Traces, Wag-
 on Chain, &c.....70¢10 @ 75¢

Miscellaneous—

Jack Chain.....60¢10 @ 70¢
 Iron.....60¢10 @ 70¢
 Brass.....60¢10 @ 70¢
 Safety and Plumbers' Chain, 75¢
 Gal. Pump Chain.....10¢, 4/4¢
 Bridgeport Chain Co.:
 Triumph Halter and Coil, 35¢ @ 40¢
 Triumph Dog.....50¢10 @ 60¢
 Brown Halter and Coil.....45¢5 @ 50¢
 Covert Mfg. Co.:
 Breast, Halter, Heel, Rein, Stal-
 lion, Post.....30¢10 @ 10¢
 Oneida Community:
 American Halter, Dog and Kennel
 Chains.....35¢2 @ 40¢
 Niagara Dog Leads and Kennel
 Chains.....45¢5 @ 50¢
 Wire Goods Co.:
 Dog Chain.....70¢
 Universal Dbl.-Jointed Chain.....50¢10

Chain and Ribbon, Sash—

Oneida Community:
 Steel Chain.....60¢
 Pullman:
 Bronze Chain, 00%; Steel Chain,
 Coppered.....60¢10
 Sash Chain Attachments, per set, 8¢
 Aluminum Sash Ribbon, per 100
 ft.....\$2.00 @ \$5.00
 Sash Ribbon Attachments, per set, 8¢

Chalk—

Carpenters' Blue.....gro., 50¢ @ 55¢
 Carpenters' Red.....gro., 50¢ @ 55¢
 Carpenters' White.....gro., 40¢ @ 45¢

Checks, Door—

Bardale's.....35¢4
 Bending, Ogden.....25¢5
 Pullman, per gro.....\$4.50
 Russwin.....35¢4

Chests, Tool—

American Tool Chest Co.:
 Boys' Chests, with Tools.....55¢
 Youth's Chests, with Tools.....40¢
 Gentlemen's Chests, with Tools, 30¢
 Farmers' Carpenters, etc., Chests,
 with Tools.....20¢
 Machinists' and Pipe Fitters'
 Chests, Emory.....45¢
 Tool Cabinets.....45¢
 C. E. Jennings & Co.'s Machinists'
 Tool Chests.....75¢4

Chisels—**Socket Framing and Firmer**

Standard List.....80¢10 @ 90¢
 Buck Bros.....30¢
 C. E. Jennings & Co.:
 Socket Firmer No. 10.....25¢7 1/2
 Socket Framing No. 15.....25¢7 1/2
 R. & E. Mfg. Co.....70¢7 @ 10¢
 Swan's.....60¢ @ 70¢
 L. & I. J. White & Co.....30¢30 @ 5¢

Tanged—

Tanged Firmers.....35¢10 @ 40¢
 Buck Bros.....30¢
 C. E. Jennings & Co. Nos. 191, 181,
 259, 269.....25¢30 @ 5¢
 R. & E. Mfg. Co.....25¢30 @ 5¢
 L. & I. J. White Co.....25¢30 @ 5¢

Box—

Elmore Tool Mfg. Co.....50¢

Cold—

Cold Chisels, good quality, 13¢ @ 15¢
 Cold Chisels, fair quality, 11¢ @ 12¢
 Cold Chisels, ordinary.....9¢ @ 10¢
 Elmore Tool Mfg. Co.:
 Cold Chisels.....50¢5

Chucks—

Almond Drill Chucks.....35¢
 Almond Turret Six-Tool Chuck.....40¢
 Beach Pat. each \$8.00.....35¢5
 Cincinnati Chuck Co.:
 Independent 4-jaw Reversible.....35¢
 Jacobs' Drill Chucks.....35¢
 Skinner Lathe Chucks:
 Independent.....35¢
 Universal, Reversible Jaws.....35¢
 Universal, Com. Style Jaws.....40¢
 Combination, Reversible Jaws.....35¢
 Combination, Com. Style Jaws.....40¢
 Round Body or Box Body, 2 Chuck
 Jaws.....25¢
 Geared Scroll Chucks.....25¢
 Drill Chucks:
 New Model, 25%; Geared Pat-
 tern, 25%; Skinner Patent.....25¢
 Positive Drive.....40¢
 Planer Chucks.....20¢
 Standard.....15¢
 Drill Press Vises.....30¢
 Face Plate Jaws.....30¢
 Standard Tool Co.:
 Improved Drill Chuck.....45¢
 Union Mfg. Co.:
 Combination, Nos. 1, 2, 3, 4, 5, 6,
 7, 8 and 10, 40¢; No. 21.....35¢
 Scroll Combinations, Nos. 83 and
 84.....30¢
 Geared Scroll, Nos. 33, 34 and 35, 25¢
 Independent Iron, Nos. 18 and 318, 35¢
 Independent Steel, No. 64.....25¢
 Union Drill, Nos. 000, 00, 100, 101,
 102, 103, 104.....25¢
 Union Gear Drill.....25¢
 Universal, 11, 12, 16, 17, 13, 14, 15, 40¢
 Universal No. 42.....35¢
 Iron Face Plate Jaws, Nos. 28, 30,
 40 and 50.....35¢
 Steel Face Plate Jaws, Nos. 10 and
 72.....30¢
 Westcott Patent Chucks:
 Lathe Chucks.....50¢
 Little Giant Auxiliary Drill.....50¢
 Little Giant Double Grip Drill.....50¢
 Little Giant Drill, Improved.....50¢
 Oneida Drill.....50¢
 Scroll Combination Lathe.....50¢

Clamps—

Carriage Makers', Star, P., S. & W.
 Co.....50¢5 @ 50¢5
 Best Parallel.....35¢10
 Hammer & Co.:
 Adjustable.....20¢5
 Carriage Makers' H. P. Screw 40¢5
 Myers', Standard and Wenzelmann
 Hay Rack.....50¢
 Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain,

Iwan's Champion, Adjustable.....50¢
 Iwan's Champion, Stationary.....40¢5

Cleavers, Butchers'—

Poster Bros.....30¢
 L. & I. J. White Co.....30¢

Clippers, Horse and**Sheep—**

Chicago Flexible Shaft Co.:
 1902 Chicago Horse, each, \$10.75
 20th Century Horse, each, \$5.00
 Lightning Belt Horse, each, \$15.00
 Chicago Belt Horse, each, \$20.00
 Stewart's Enclosed Gear Ball
 Bearing Horse, each, \$7.50
 Stewart's New Model Sheep
 Shearing Machine, each, \$12.75
 Stewart Enclosed Gear Shear-
 ing Machine, No. 8, each, \$9.75

Clips, Axle—

Regular Styles.....80¢80 @ 10¢

Cocks, Brass—

Hardware Hat:
 Plain Bibbs, Globe, Kerosene,
 Racking, Liquor, Bottling,
 &c.....75¢
 Compression Bibbs.....75¢

Compasses, Dividers, &c.

Ordinary Goods.....75¢ @ 75¢5

Conductor Pipe,—

All territories, L. C. L.
 Galvanized Steel.....75¢10 @ 75¢
 Charcoal.....50¢10 @ 74¢
 Copper.....50¢10 @ 74¢
 Terms, 60 days; 2¢ cash 10 days. Fac-
 tory shipments generally delivered.
 See also Eave Troughs.

Coolers, Water—

L. & G. Mfg. Co.:
 Galvanized, Lined, side handles,
 Gal.....2 3 4 6 8
 Each.....\$1.30 1.60 2.00 2.30 3.00
 White Enamelled Lined, Side
 Handles:
 Gal.....2 3 4 6 8
 Each.....\$2.40 2.80 3.50 4.50 5.60
 Agate Lined, Side Handles:
 Gal.....2 3 4 6 8
 Each.....\$3.00 3.10 4.30 5.30 6.60

Coppers, Soldering—

Soldering Coppers, 3 lb. to pair
 and heavier, 21¢; lighter than
 3 lb. to pair.....23¢

Cord— Sash—

Braided, Drab.....lb. 35¢
 Braided, White, Com. Nos. 8
 to 12, 25¢; No. 7, 25¢; No.
 6, 26¢.
 Cable Laid Italian, lb., No. 18, 37¢
 Italian, lb., A, No. 18, 25¢; B, 22¢
 Common India.....lb., 11¢ @ 11 1/2¢
 Cotton Sash Cord, Twisted, 18¢ @ 20¢
 Patent Russian.....lb., 20¢
 Cable Laid Russia.....lb., 21¢
 India Hemp, Br'd'd.....lb., 21¢
 Patent India, Twisted.....lb., 17¢
 Edystone Braided, Nos. 8 to 12,
 26¢; 1, 26¢; 6, 27 1/2¢.
 Harmony Cable Laid Italian, Nos. 7
 to 10.....lb. 23¢
 Pulman:
 Wire Sash Cord.....10¢
 Sash Cord Attachments, per 100, \$2.00
 Samson, Nos. 8 to 12:
 Braided, 3 lb., Drab Cotton,
 55¢; Italian Hemp, 40¢ @
 50¢; Linen, 65¢; White Cot-
 ton, 50¢; Spot Cord.....30¢
 Massachusetts, White.....lb. 40¢
 Massachusetts, Drab.....lb. 45¢
 Phoenix, White, Nos. 8 to 12.....27¢
 Silver Lake, per lb.:
 A, Drab, 55¢; A, White, 40¢;
 B, Drab, 40¢; B, White, 35¢;
 Italian Hemp, 40¢; Linen.....57 1/2¢
 See also Chain and Ribbon.

Wire, Picture—

Full Length.....90¢ @ 90¢
 Short Length.....90¢ @ 90¢
 Hendryx Standard Wire Picture Cord.....90¢10
 Turner & Stanton Co. Wire Picture
 Cord.....90¢10

Cradles—

Grain.....50¢

Crayons—

White Round Crayons, Cases, 100
 gro., \$8.00, \$8.50, \$9.00 and \$10.00
 according to grade.
 Zehnick's Lumber:
 White and Purple, Indelible.....\$7.50
 Blue, Red, Green, Yellow and
 Terra Cotta, \$6.50; Black.....\$4.50
 Giant Lumber, 5 1/2 in. x 15-16 in.
 round, all colors, \$12.00; Indel-
 ible, \$11.00; Black.....\$10.00
 Genuine Soapstone, Metal Workers'
 5 in. x 1 1/4 in. Round, \$2.50; 5 in. x
 1 1/4 in. Square, \$1.75; 5 x 1 1/2 x 3-16,
 \$2.50; 5 x 1 1/4 x 3-16.....\$3.00
 Surmark, Black, \$2.25; Blue, Red
 and Yellow.....\$2.50

Cutlery, Table—

International Silver Company:
 No. 12 M'd'm Knives, 1847, \$9 doz. \$3.50
 Star, Eagle, Rogers & Hamilton
 and Anchor.....\$9 doz. \$3.00
 Wm. Rogers & Son.....\$9 doz. \$2.50

Cutters— Glass—

H. H. Mayhew Co.....40¢5

Meat and Food—

Enterprise:
 Nos. 5 10 12 22 32
 Each \$1.75 \$2.50 \$2.25 \$4 \$5 25¢ @ 7 1/2¢
 No. 202, \$1.50.....40¢ @ 7 1/2¢
 P. S. & W. Co.:
 Ideal.....40¢ @ 40¢5
 Hales.....60¢ @ 60¢5
 Little Giant.....\$9 doz. 40¢ @ 50¢
 Nos. 305 310 312 320 322
 \$35.00 \$18.00 \$14.00 \$72.00 \$68.00
 New Triumph No. 605, \$9 doz. \$24.00
 Russwin Food, No. 1, \$24.00; No. 2,
 \$27.00; 3, \$12.00.....45¢ @ 10¢10
 \$15.00 \$18.00

Slaw and Kraut—

Henry Diston & Sons:
 Slaw and Kraut Cutters.....35¢
 Corn Graters.....30¢
 J. M. Mast Mfg. Co.:
 Slaw Cutters, 1 Knife.....\$9 doz. \$3.00
 Combined Slaw Cutter and Corn
 Grater.....\$9 doz. \$4.00

Tobacco—

Enterprise.....25¢ @ 30¢

Diggers, Post Hole, &c—

Diston's:
 Rapid, \$9 doz. \$24.00.....25¢
 Samson, \$9 doz. \$34.00.....25¢
 Iwan's Pat. Post Hole and Well
 Auger.....40¢
 Vaughan Pattern Post Hole Augers,
 4 to 9 in., \$9 doz.....\$8.25
 Perfection Post Hole Diggers,
 doz.....\$8.25

Split Handle Post Hole Diggers.

Hercules Pattern, \$9 doz. \$7.25
 Kohler's, \$9 doz. Universal, \$14.00,
 Little Giant, \$12.00; Genuine Her-
 cules, \$10.00; Invincible, \$9.00;
 Rival, \$8.50; Pioneer.....\$7.50
 Never-Break Crucible Steel Post
 Hole Diggers.....60¢

Dressers Emery Wheel—

Sterling Emery Wheel Dressers.....35¢
 Sterling Wheel Dresser Cutters.....35¢

Drills and Drill Stocks—

Blacksmith's Common Drilling
 Machines.....\$1.50 @ 1.75
 Breast, Millers Falls.....15¢ @ 10¢
 Breast, P., S. & W.....30¢ @ 10¢
 C. & C. Hatchet.....25¢
 Reversible Hatchet Die Stocks.....25¢
 Forbes Die Stocks.....25¢
 Goodell Automatic Drills, 50¢ @ 10¢
 Millers Falls Automatic Drills:
 Graves', per doz., Nos. 1, \$4.86;
 2, \$8.16.
 Millers Falls Automatic Drills, 33¢ @ 10¢
 Noyes Repair Shop Drill No. 10.....20¢
 Ratchet, Parker's.....40¢
 Ratchet, Weston's, Styles A and B, 50¢
 Ratchet, Weston's, Styles C, D and
 F.....45¢
 Ratchet, Weston's, Style H Im-
 proved.....45¢
 Ratchet, No. 012.....50¢
 Ratchet, Celebrated.....50¢
 Ratchet, Whitney's, P., S. & W. 50¢
 Star Drills.....50¢ @ 10¢
 Star Pipe Drills.....50¢ @ 10¢
 Secho Extension Drills.....40¢ @ 10¢5
 Star Drill Holders.....50¢ @ 10¢10
 Star Drill Points.....50¢ @ 10¢10

Twist Drills—

Bit Stock.....70¢ @ 70¢10
 Taper and Straight Shank.....65¢ @ 65¢10

Drivers, Screw—

Buck Bros.' Screw Driver Bits.....30¢
 Diston's Screw Drivers, Handles
 and Ferrules.....70¢
 Elmore Tool Mfg. Co.:
 Elmore.....60¢
 Hartford.....60¢
 Indestructible.....55¢
 Standard Nevturn.....75¢
 S at.....75¢
 S.crew Driver Bits.....25¢
 Fray's Hol. H'dle Sets, No. 3, \$12.50
 Ford's Brace Screw Drivers.....40¢ @ 10¢
 Gay's Double Action Ratchet.....35¢
 Goodell's Auto.....65¢ @ 65¢10
 Mayhew's Black Handle.....45¢
 Mayhew's Monarch.....45¢
 Millers Falls, \$9 doz., Nos. 11, \$9.95;
 12, \$13.75; 20, \$8.17; 21, \$8.46; 41,
 \$13.43; 42, \$17.21.
 Swan's:
 Nos. 7565 to 7569, 60%; No. 7540
 40¢ @ 10¢

Eave Trough, Galvanized—

All territories,
 Galvanized Steel.....80¢10 @ 10¢
 Copper.....50¢10 @ 10¢
 Terms.—2% for cash. Factory shipment
 generally delivered.
 See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
 Galv. Steel, Galv. C. I. and
 Copper.
 Sizes 2, 3, 4.....30¢
 Sizes 1 1/2, 2 1/2, 3 1/2, 5, 6.....60¢ @ 10¢
 No. 26.....50¢
 No. 24.....25¢
 Copper Elbows.....50¢

Emery, Turkish—

4 to 5 1/2 to
 220: Flour.
 Kegs.....lb. 5¢ 5 1/2¢ 5 3/4¢
 1/2 Kegs.....lb. 5 1/2¢ 5 3/4¢ 5 3/4¢
 1/4 Kegs.....lb. 5 1/2¢ 5 3/4¢ 5 3/4¢
 10-lb. cans,
 10 in case.....5 1/2¢ 7¢ 6¢
 10-lb. cans, less
 than 1.....10¢ 10¢ 8¢
 Less quantity, 10¢ 10¢ 8¢
 NOTE.—In lots 1 to 3 tons a discount of
 10% is given.

Extensions, Bit—

Ford's Auger Bit Extensions.....40¢ @ 5¢

Extinguishers—Fire

Royal Mfg. Co. Fire, \$9 doz.....50¢
 \$12.00.....50¢

Fasteners, Blind—

Unson's Patent.....25¢
 Walling's.....50¢
 Zimmermann's Jap'd and Galv., 65¢
 Bronze and Plated.....50¢

Cord and Weight—

Ivan, \$9 gro., \$1.08.....25¢
 Titan, \$9 gro., \$0.66.....25¢

Corrugated—

Acme Corrugated Fasteners.....70%

Faucets—

Cork Lined.....50&10@60%
Metallic Key, Leather Lined.....
60&10@70%
Red Cedar.....40&5@10&10&5%
Petroleum.....70&10@75%

John Sommer Faucet Co.:

Peerless Tin Key.....40%
Boss Tin Key.....50%
Victor Metal Key.....50&10
Duplex Metal Key.....40%
Diamond Lock.....40%
I. X. L. Cork Lined.....50&10
Reliable Cork Lined.....50&10
Chicago Cork Lined.....60%
O. K. Cork Lined.....50%
No Brand, Cedar.....50%
Perfection, Cedar.....30%

Self Measuring:

Enterprise, Self Measuring and
Pump, 3/4 doz., \$36.00.....40&10
Lane's, 3/4 doz., \$36.00.....40&10

Files— Domestic—

Best Brands.....70&10@75&10%
Standard Brands.....75&10@60%
Lower Grade.....75&10@80&10%
Disston's Superfine.....60%
Fitchburg.....60%
Heller Bros.....70&10@75&10%
Lightweight Bros.....70%
McCauley's American Standard.....
60&10@10%
McCaffrey's Swiss Pattern.....45&10
Simonds.....70%

Fixtures, Fire Door—

Richards Mfg. Co.:

Universal, No. 103; Special, No. 104.....\$3.75

Fusible Links, No. 96.....50%

Expansion Bolts, No. 107.....60&10%

Grindstone—

Net Prices:

Inch.....15 17 19 21

Per doz.....\$3.00 3.25 3.55 4.00

Peck, Stow & Wilcox Co.:

In.....15 17 19 21 24

\$4.00 4.40 4.75 5.50 6.50.....20%

Reading Hardware Co.....50&10%

Frames— Wood Saw—

White, 8'g't Bar, per doz.80@1.00
Red, 8'g't Bar, per doz.1.00@1.15
Red, Dbl. Brace, per doz.1.40@1.80

Freezers, Ice Cream—

Qt.....1 2 3 4 6

Each.....\$1.25 \$1.60 \$1.90 \$2.20 \$2.50

Fuse— Per 1000 Feet.

Hemp.....\$2.75
Cotton.....3.20
Waterproof Spl. Taped.....3.65
Waterproof Dbl. Taped.....4.40
Waterproof Tpl. Taped.....5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....80@80&85%

Gauges—

Marking, Mortise, &c. 50@50&10%
Chapin-Stephens Co.:

Marking, Mortise, &c. 50&50&10%

Diston's Marking, Mortise, &c. 60&10%

Wire, Brown & Sharpe's.....33&5%

Wire, Morse's.....25%

Wire, P. S. & W. Co.....25%

Gimlets— Single Cut—

Numbered assortment, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.30

Spike, Metal, No. 1, \$4.00; 2, \$4.30

Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60

Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60

Glasses, Level—

Chapin-Stephens Co.....65@65&10%

Diston & Sons.....60&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush, 25&10@50%

Grease, Axle—

Common Grade.....gro. \$6.00@ \$6.50

Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, 3/4 doz., 1 lb. \$1.20; 2 lb., \$2.50; 20 in., \$2.70; 22 in., \$3.00; 24 in., \$3.30; 26 in., \$3.50; 30 in., \$3.80

Sledge, 3/4 doz., oval, 30 in., \$3.80; oval, 36 in., \$4.00; octagon, 36 in., \$4.00

Axe, 3/4 doz., 28 to 31 in., \$5.60; 36 in., \$5.80

Adze, 3/4 doz., 36 in., \$5.80; 36 in., \$7.60

Pick, 3/4 doz., R. R. 36 in., \$8.00; coal, 34 in., \$8.80

Hatchet, 3/4 doz., 12 to 14 in., \$2.00

Mower Knife and Tool, \$5.00, 40&10%

Royal Mfg. Co.:

Hand Power, each, Nos. 1, \$1.75; 2, \$2.25; 1A, \$2.50; 1B, \$3.25.....30&4%
Foot Power, No. 15, \$5.00.....33%
Encased Gears, No. 15 Hand Power, \$13.50; Combined Hand and Foot Power, \$15.00.....33%
Lawn Mower Grinder, No. 40, \$3.75.....33%
Sickle Grinder, each, No. 20, \$5.00.....33%
Cast or Cut Gears.....33%

Grindstones—

Pike Mfg. Co.:

Improved Family Grindstones, 3/4 inch, 3/4 doz., \$2.00.....33%
Richards Mfg. Co., Eli and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Halters and Ties—

Cow Ties.....70&10@—%

Bridgeport Chain Co.:

Triumph Coil and Halters, 35&2 1/2@40%

Brown Coil and Halters.....45&50&5%

Brown Cow Ties.....50&50&50&10&5%

Brown Tie Outs.....70&10@75&5%

Covert Mfg. Co.:

Web.....30&10%

Jute Rope.....55%

Sisal Rope.....55%

Cotton Rope.....55%

Hemp Rope.....45%

Oneida Community:

Am. Coil and Halters.....40&40&5%

Am. Cow Ties.....35&2 1/2@40%

Niagara Coil and Halters.....45&50&5%

Niagara Cow Ties.....50%

Hammers—

Handled Hammers—

Heller's Machinists'.....65&10@65&10&10%
Heller's Farriers'.....40&10@10%
Peck, Stow & Wilcox Co.:

Crucible Steel.....50%

Farriers'.....50%

Riveting.....50%

Machinists'.....50%

Blacksmiths'.....50%

Elmore Shoemakers' Hammers.....75%

Victor Magnetic Tack, 3/4 gro.....\$7.75

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢.....80&10%
3 to 5 lb., per lb., 40¢.....80&10&10%
Over 5 lb., per lb., 30¢.....80&10&10%

Handles—

Agricultural Tool Handles

Axe, Pick, &c. 60&10@60&10&10%

Hoe, Rake, &c. 30&5@30&10%

Fork, Shovel, Spade, &c. 30&5@30&10%

Long Handles.....60&5@30&10%

D Handles.....30&5@30&10%

Cross-Cut Saw Handles—

Atkins'.....35%

Diston's Handles and Saw Tabs.....45%

Mechanics' Tool Handles—

Auger, assorted.....gro. \$3.00@ \$3.50

Brad Axl.....\$1.65@ \$1.75

Chisel Handles, Ass'd, per gro.:

Tanged Farmer, Apple, \$2.40@ \$2.65; Hickory.....\$2.15@ \$2.40

Socket Farming, Apple, \$1.75@ \$1.95; Hickory.....\$1.60@ \$1.75

Socket Framing, Hickory, \$1.60@ \$1.75

File, assorted.....gro. \$1.25@ \$1.50

Hammer, Hatchet, &c. 60&10@60&10&5%

Hand Saw, Varnished, doz., 80¢; Not Varnished.....70@75¢

Plane Handles:

Jack, doz., 25¢; Fore, doz., 40¢

Chapin-Stephens Co.:

Carving Tool.....30@30&10%

Chisel.....60@60&10%

File and Awl.....60@60&10%

Saw and Plane.....30@30&10%

Screw Driver.....30@30&10%

Millers Falls Adj. and Ratchet Auger Handles.....15&10%

Nicholson Simplicity File Handle.....\$0.85@ \$1.50

J. L. Osgood:

Indestructible File and Tool, 3/4 gro., No. 1, \$8.00; No. 3, \$8.50; No. 5, \$9.00; No. 4, \$9.50; No. 5, \$10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:

Hammer, 3/4 doz., 12 in., \$2.00; 14 in., \$2.00; 16 in., \$2.30; 18 in., \$2.50; 20 in., \$2.70; 22 in., \$3.00; 24 in., \$3.30; 26 in., \$3.50; 30 in., \$3.80

Sledge, 3/4 doz., oval, 30 in., \$3.80; oval, 36 in., \$4.00; octagon, 36 in., \$4.00

Axe, 3/4 doz., 28 to 31 in., \$5.60; 36 in., \$5.80

Adze, 3/4 doz., 36 in., \$5.80; 36 in., \$7.60

Pick, 3/4 doz., R. R. 36 in., \$8.00; coal, 34 in., \$8.80

Hatchet, 3/4 doz., 12 to 14 in., \$2.00

Mower Knife and Tool, \$5.00, 40&10%

Hangers—

NOTE—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.

Chicago Spring Butt Co.:

Friction.....25%

Oscillating.....25%

Big Twin.....25%

Chisholm & Moore Mfg. Co.:

Baggage Car Door.....50%

Elevator.....50%

Railroad.....50%

Cronk & Carrier Mfg. Co.:

Loose Axle.....60&10%

Roller Bearing.....70%

Griffin Mfg. Co.:

Solid Axle, No. 10, \$12.00, 60&10%

Roller Bearing, No. 11, \$15.00, 60&10%

Roller Bearing, Ex. Hy., No. 22, \$18.00, 60&10%

Roll Dog, \$24.00, 70%

Lane Bros. Co.:

Parlor, Ball Bearing, \$1.00; Standard, \$3.15; No. 105, \$2.85; New Model, \$2.80; New Champion per set of 4 Hangers, complete with track.....\$2.25

Barn Door, Standard.....60&10%

Hinged.....net \$6.08

Covered.....60&5%

Special.....70&5%

Trolley Hangers and track.....50%

Lawrence Bros.:

Cleveland.....70&7 1/2%

Clipper, No. 75.....60%

Crown.....55&10%

Cyclone, No. 40.....net \$6.50

Tandem, No. 50.....net \$7.50

New York.....55&10%

Trolley, No. 20, 3/4 pair.....\$1.25

McKinney Mfg. Co.:

Roller Bearing, Nos. 1 and 2, 70%

Anti-Friction.....60%

Hinged Hangers, King Charm, 60%

F. E. Myers & Bro., Stayon;

K; O K Adjustable; Sure Grip; Sure Grip Adjustable; Sure Grip Tandem Adjustable; Sure Grip Adjustable.....60%

Richards Mfg. Co.:

Hangers, Nos. 47, 48, 147, 247, 60&5%

Pioneer Wood Track, No. 3, \$2.25

Roller B'g St'l Track No. 12, \$2.20

Roller B'g St'l Track No. 13, \$2.50

Roller B'g, Nos. 39, 41, 43, 70&7 1/2%

Hero, Adj. Track No. 19, 50&10%

Adjustable Track Tandem Trolley Track No. 16, 50&10%

Seal, Steel Track No. 5, \$2.25

Auto Adj. Track No. 22, 50&5%

Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.25; No. 121, \$2.45; No. 150, \$2.50

Safety Underwriters F. D. No. 10, \$2.50

Tandem No. 2, 2 1/2 and 3 60&10%

Palace, Adjustable Track No. 132, 50&5%

Royal, Adjustable Track No. 122, 50&10%

Ives' Wood Track No. 1, \$2.25

Trolley B. D. No. 20, 50&10%

Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 37, \$1.60

Roller Bearings, Nos. 37, 39, 41, 43, 44, Sizes 1 and 2, 70&7 1/2%

Anti-friction, No. 42; No. 44, sizes 2 and 3, 60%

Hinged Tandem No. 48, 60&5%

Fing Door B. B. Swivel No. 135, 40%

Hangers— Garment—

Pullman Trouser, 3/4 gro., No. 1, \$9.00; No. 4, \$24.00; No. 5, \$16.50; No. 8, Black Enamel, \$7.50; No. 10, \$21.00; No. 12, \$8.00; No. 15, Rods, \$9.00; No. 18, Loops.....\$10.00

Victor Folding.....3/4 gro. \$9.60

Joist and Timber—

Lane Bros. Co.....35%

Hasps—

Griffin's Security Hasp.....50&10%

McKinney's Perfect Hasp, 3/4 doz., 60%

Hatchets—

Regular list, first qual. 50&10@60%

Second quality.....60@60&10%

Heaters, Carriage—

Clark No. 5, \$1.25; No. 5B, \$1.50; No. 3, \$1.75; No. 3D, \$2.00; No. 1, \$3.00

Big Hit Assortment, 3/4 case.....\$13.80

Leader, 3/4 case.....\$9.00

Clark Coal, doz.....\$0.75

A B C Coal, doz.....\$3.60

Handled—

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit.....\$2.50

Holders— Bit—

Angular, $\frac{3}{4}$ doz. \$21.00.....45&10%

Broom—

Pullman Broom, $\frac{3}{4}$ gro.....\$3.00

Door—

Bardley's, Iron, 40%; Bronze.....20%
Empire.....50%
Pullman.....25%
Richards Mfg. Co., No. 117, Ever-
ready, 40%; Nos. 118, 119, Sure
Grip.....50%
Superior.....40%

File and Tool—

Nicholson File Holders and File
Handles.....33&10%

Fruit Jar—

Triumph Fruit Jar Holder, $\frac{3}{4}$ doz.....\$2.00

Nipple—

Curtis Nipple Holders.....5%

Trace and Rein—

Fernald Double Trace Holder, $\frac{3}{4}$ doz.
pairs.....\$1.25
Dash Rein Holder, $\frac{3}{4}$ doz.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty,
50%; German.....33&10%

Hooks—Cast—

Bird Cage, Reading.....50%
Clothes Line, Reading List.....50&5%
Coat and Hat Iron, Reading.....50%
Coat and Hat, Bronze Metal, Read-
ing.....33&10%
Coat and Hat, Wroughtville.....60&5%
Harness, Reading List.....50%

Wire—

Bell, Nos. 1 to 15.....80&5@80&10%
Wire C. & H. Hooks.....80&10%
Parker Wire Goods Co., King.....75&10%
Wire Goods Co.:
Acme, 60&10%; Chief, 75&10%
Crown, 75&10%
Czar, 70%; Cap-
itol 80%; Czar Harness, 50&10%
Ceiling, 75&80%.

Miscellaneous—

Hooks, Bench, see Stops, Bench.
Bush, Light, doz., \$6.20; Medium,
\$6.75; Heavy, \$7.65
Grass, best, all sizes, per doz.....\$2.75@3.00
Grass, common grades, all sizes,
per doz.....\$1.25@1.50
Hooks and Eyes:
Brass.....60&10%
Malleable Iron.....70&10%
Covert Mfg. Co., Gate and Scuttle
Hooks.....25%
Turner & Stanton Co., Cup and
Shoulder.....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Hose, Rubber—

Garden Hose, $\frac{3}{4}$ -inch:
Competition.....ft. 6@6 1/2¢
3-ply Guaranteed.....ft. 8@8 1/2¢
4-ply Guaranteed.....ft. 9@9 1/2¢
Cotton Garden, $\frac{3}{4}$ -in., coupled:
Low Grade.....ft. 6@9¢
Fair Quality.....ft. 10@11¢

Irons— Sad—

From 4 to 10.....lb. 3@3 1/2¢
Mrs. Post's, cents per set:
Nos. 50 55 60 65
Jap'd Caps.....8¢ 8 1/2¢ 9¢ 9 1/2¢
Tin'd Caps.....91 88 1.01 98

Bar and Corner—

Richards Mfg. Co., Bar, 60&10%;
Corner.....60%

Jacks, Wagons—

Covert Mfg. Co.:
Auto Screw.....30&10%; Steel, 80%
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130.....50&10%

Ladder—

Richards Mfg. Co., Ladder Jacks.....53%

Jointers—

Pike Mfg. Co., Saw Jointers, \$7.00.....40%

Knives—

Butcher, Kitchen, &c.—

Foster Bros., Butcher, &c.....30%

Corn—

Columbian Cutlery Co., Wilent,
Brand Knives and Hooks.....60%

Drawing—

Standard List.....80@—%
C. E. Jennings & Co., Nos. 45, 46
25&7 1/2%
Jennings & Griffin, Nos. 41, 42,
60%&7 1/2%
Rwan's.....60%&7 1/2%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. \$5.00@5.50
Iwan's Sickle Edge..... $\frac{3}{4}$ doz. \$9.00
Iwan's Serrated..... $\frac{3}{4}$ doz. \$9.50

Miscellaneous—

Farriers'.....doz. \$2.40@2.80

Knobs—

Base, 2 1/2-inch, Birch or Maple,
Rubber Tip.....gro. \$1.25@1.40
Door, Mineral.....doz. 65¢@70¢
Door, Por. Jap'd.....doz. 70¢@75¢
Door, Por. Nickel.....doz. \$2.05@2.15
Bardley's Wood Door and Shutters.....10%

Ladders, Store, &c.—

Lane's Store.....25%
Myers Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co.'s list, Melting and
Plumbers.....25%
P. S. & W.....40&10%
Reading.....50&10%

Lamps,—

Hammer's M. I. Hand.....45%

Lanterns—Tubular—

Regular, No. 0.....doz. \$1.00@1.50
Side Light, No. 0.....doz. \$1.25@1.75
Hinge Globe, No. 0.....doz. \$1.25@1.75
Other Styles.....40&5%

Bull's Eye Police—

3-inch.....\$3.75@4.00

Latches— Thumb—

Roggin's Latches, Jap'd, doz. 40¢
Screws.....doz. \$4.00

Door—

Cronk & Carrier Mfg. Co., No. 101,
Richards' Bull Dog, Heavy, No.
125.....50&5%
Richards' Trump, No. 127.....\$1.50

Leaders, Cattle—

Small.....doz. 45¢; large, 55¢
Covert Mfg. Co.: Cotton, 55%; Hemp,
45%; Jute, 55%; Sisal, 45%.

Lifters, Transom—

Reading, Iron, 50&5%; Bronze
Metal.....33&10%
R. & E.....10%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet.....\$3.50 1.95 1.75
75 feet.....\$1.95 1.65 1.59
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3, 40¢
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.
3, \$7.50..... $\frac{3}{4}$ gr. 30%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3 1/2, \$1.50; No. 4,
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
No. 4 1/2, \$4.50.....30%
Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Drab Cotton,
\$8.50.....20%
Clothes Lines, White Cotton: 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25.....30%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and
Awning Lines.....40%
Clothes Lines, White Cotton.....40%
Shade Cord, Cotton or Linen.....30%

Locks— Cabinet—

Cabinet Locks.....\$1 1/4@3 1/4@5%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made
on these goods.

Reading Hardware Co.....33 1/2%

R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and
Roses.....75&10%

Sash, &c.—

Ives' Patent:
Crescent.....25%
Automatic Gravity Metal Sash, $\frac{3}{4}$
gro. \$14.50.....25%
Window Ventilating.....25%
Pullman Patent Ventilating Lock.....25%
Reading Sash Locks, Iron.....50%
Reading Sash Locks, Bronze Metal,
33 1/2%

Machines—Boring—

Com. Up'r't, without Augers.....\$2.00@2.25

Com. Angl'r, without Augers.....\$2.25@2.50

Ford Auger Bit Co.....\$22.00
Jennings' Nos. 1 and 4.....25&7 1/2%
Millers' Falls.....5.75
Snell's, Upright, \$2.65; Angular, \$2.90
Swan's Improved.....40&10%

Corking—

Reisinger Invincible Hand Power..... $\frac{3}{4}$ doz. \$18.00

Forming, Bending, Etc—

Royal Forming, Bending, Crimp-
ing and Fluting, Hand Power,
each, \$20.00.....40%

Hoisting—

Moore's Anti-Friction Chain Hoist.....30%
Moore's Hand Hoist, with Lock.....20%
Moore's Brake.....20%
Moore's Cyclone High Speed Chain
Hoist.....25%

Ice Cutting—

Chandler's.....12 1/2%

Mallets—

Hickory.....45&5@50%
Lignumvite.....45&5@50%
Tinnars' Hickory and Apple-
wood.....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works.....50%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.....50%
Everlasting Flexible Steel.....40%

Mills, Coffee, &c.—

Enterprise Mfg. Co.:
Coffee.....20&25%
Bone, Shell and Corn.....25&10%
Parker's Columbia and Victoria.....33 1/4%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

Motors, Water—

Pike Mfg. Co., Tool and Knife
Grinding.....33 1/2%

Mowers, Lawn—

NOTE.—Net prices are generally quoted

Cheapest, 10-in., \$1.80; advance
10¢ for each size.

Cheap, 10-in., \$2.50; advance, 10¢
for each size.

Better Grade, 10-in., \$3.25; ad-
vance 25¢ for each size.

High Grade.....\$1.50 4.75 5.00 5.25
Continental, High and Low Wheel,
50&10%

Great American.....60%
Great American Ball Bearing.....60%
Quaker City.....60%
Pennsylvania, High and Low Wheel,
50&10%

Pennsylvania, Jr., Ball Bearing
50&5%

Pennsylvania Golf, 6 Knives, Low
Wheel, 33 1/4%; High Wheel.....45%

Pennsylvania Golf, Ball Bearing, 7
Knives, High Wheel.....33 1/4%
Pennsylvania Horse, 30 and 38 inch,
33 1/4%
Pennsylvania Pony or Two Man, 40&5%
Pennsylvania Grand Horse, 30 and
38 in.....33 1/4%

Nails—

Wire Nails and Brads, Miscel-
laneous.....85&10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholster-
ers', &c. See Tacks.

Horse—

Jobbers' Special Brands,
per lb. 9¢

Picture—

Brass Hd. gro. 1 1/2 2 2 1/2 3 in.
55 55 60 70
Por. Head, gro., all sizes.....80¢

Upholsters—

Brass.....30%
Plated.....30&10%

Nuts— Blank or Tapped.

Cold Punched: Off list.
Square.....5.10@5.20¢
Hexagon.....5.70@5.80¢
Square, C. T. & R.....5.50@5.60¢
Hexagon, C. T. & R. 5.30@5.40¢
Hot Pressed: Off list.
Square.....5.50@5.60¢
Hexagon.....5.95@6.05¢

Oakum—

Best.....lb. 6 1/2¢
U. S. Navy.....lb. 6¢
Navy.....lb. 5¢
Plumbers' Spun Oakum.....2 1/2@3¢

Oil—

Pike Mfg. Co., Stonoil.....40%

Oil Tanks—See Tanks, Oil.**Oilers—**

Steel, Copper Plated.....75&10%
Chase or Paragon:
Brass and Copper.....45&50%
Zinc.....65&10@70%
Railroad.....60&10&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers, etc.....60&60&10%
Hero Fruit Jar Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers, etc.....60&60&10%
Malleable, Hammers' Improved, Nos.
11, 12 and 13, 10%; Old Pattern,
Nos. 1, 2, 3, 4, 50%
Maple City Mfg. Co.:
Spring Bottom Cans.....70&70&10%
Railroad Oilers, &c.....60&60&10%

Openers Can—

Triumph Shear Can Openers, doz. \$1.20

Egg—

Hartigan Nickel Plate, $\frac{3}{4}$ doz., \$2.00;
Silver Plate, \$4.00.

Packing—

Asbestos Packing, Wick and
Rope, any quantity.....13¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Rcd.....40@50¢
Jeukins' '96, $\frac{3}{4}$ lb, 80¢.....25%

Miscellaneous—

American Packing.....lb. 7@10¢
Cotton Packing.....lb. 10@25¢
Italian Packing.....lb. 9@10¢
Jute.....lb. 4@4 1/4¢
Russia Packing.....lb. 9@10¢

Pails, Galvanized—

Net, per dozen.
Quarts.....8 10 12 14 16
Light.....\$1.45 1.65 1.80 2.00 2.35
Ex. heavy.....\$2.65 2.85 3.00 3.30 3.55
Rd. Bottom
Fire Pails.....1.95 2.10 2.30
Well Pails 1.95 2.15 2.35

Paint—

Dixon's Silica-Graphite, in 1 gal.
pails and 5 gal. kegs, 25%; pack-
ages of larger size.....20%

Pans— Dripping—

Standard List.....75&10&5%

Refrigerator, Galva.—

Inch.....12 14 16 18
Per doz.....\$2.00 2.25 2.50 2.75

Paper—Building Paper

Per roll.
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll. 38¢
Medium weight, 30 lbs. to roll. 45¢
Heavy weight, 40 lbs. to roll. 60¢
Black Water Proof Sheathing,
500 sq. ft., light weight, 65¢;
medium weight, 95¢; heavy
weight, \$1.30.
Densifying Felt, 9 and 6 sq. ft.
to lb., 10¢.....\$10.00
Red Rope Roofing, 250 sq. ft.
per roll.....\$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton,
cartloads, \$31.00; less than
cartloads.....\$32.00
2 ply, (roll 168 sq. ft.), 40 lb. 58¢
3 ply (roll 108 sq. ft.), 60 lb. 68¢
Slater's Felt (roll 500 sq. ft.),
per ton, \$35.00; per roll.....70¢

Sand Paper and Cloth—

Flint and Emery.....50&10%
Garnet Paper and Cloth.....25%

Papers—Apple—

Goodell Co.:
Family Bay State..... $\frac{3}{4}$ doz. \$15.00
Improved Bay State..... $\frac{3}{4}$ doz. \$26.00
New Lightning..... $\frac{3}{4}$ doz. \$7.30
Turn Table '98..... $\frac{3}{4}$ doz. \$6.00
White Mountain..... $\frac{3}{4}$ doz. \$3.00
Romanza Improved.....each \$7.50
Dandy.....each \$10.00
New Century.....each \$20.00
Ranger.....each \$25.00
Rapid Apple Slicer.....each \$100.00
Reading Hardware Co.:
Advance..... $\frac{3}{4}$ doz. \$1.00
Raidwin..... $\frac{3}{4}$ doz. \$1.00
Reading '72..... $\frac{3}{4}$ doz. \$3.25
Reading '75..... $\frac{3}{4}$ doz. \$6.25

Orange—

Goodell Co., Success.....each \$20.00

Potato—

Saratoga..... $\frac{3}{4}$ doz. \$7.00
White Mountain..... $\frac{3}{4}$ doz. \$6.00

Picks and Mattocks—

List	75%
Cronk's Handled Garden Mattock, $\frac{1}{2}$ doz., \$6.00.....	33%

Pins, Escutcheon—

Brass	50¢@53¢@10%
Iron	60¢@60¢@10%

Pipe, Cast Iron Soil—

Eastern Prices:	
Standard, 2-6 in.	68%
Extra Heavy, 2-6 in.	74%
Fittings, Standard and Heavy	80%

Pipe, Merchant—

Carloads to Consumers:	
Steel	%
Blk. Galv. Blk. Galv.	%
$\frac{1}{2}$ and $\frac{3}{4}$ in.	%
$\frac{1}{2}$ in.	%
$\frac{3}{4}$ in.	%
7 to 12 in.	%

Pipe, Vitrified Sewer—

Carload lots.	
Standard Pipe and Fittings, 3 to 24 in., J.O.B. factory:	
First-class	85%
Second-class	87%

Pipe, Stove—

Per 100 joints.	
C. L. L. C. L.	
Wheeling Corrugating Co.'s Nested:	
5 in., Uniform Color	\$6.90
6 in., Uniform Color	7.40
7 in., Uniform Color	8.40

Planes and Plane Irons—

Wood Planes—	
Bench, first qual.	30¢@30¢@5%
Bench, second qual.	30¢@40¢@5%
Molding	25¢@25¢@5%
Chapin-Stephens Co.:	
Bench, First Quality	30%
Bench, Second Quality	40%
Molding and Miscellaneous	25%
Toy and German	30%
Union	60%

Iron Planes—

Union	60%
Plane Irons—	
Wood Bench Plane Irons	25%
Buck Bros.	30%
Chapin-Stephens Co.	50%
Union	50%
1, & 1, 3, White	20¢@25%

Planters, Corn, Hand—

Kohler's Eclipse	\$4 doz., \$7.50
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Plates—

Felcoe	1b. 3% @ 4¢
Avery Stamping Co.:	
Standard Wrot. Steel Felcoe Plates in 100 lb keps, per 100 lb, $\frac{1}{4}$ -in. to $\frac{1}{2}$ -in., \$4.00 net; $\frac{1}{4}$ -in. to 2-in., inclusive, \$3.75 net.	

Steel Pipe Hook—

Never-Break	75¢@10%
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Pliers and Nippers -

Button Pliers	75¢@5¢@10%
Gas Burner, per doz., 5 in., \$1.25 @ \$1.50; 6 in., \$1.45, \$1.50.	
Gas pipe, 7 8 10 12-in.	\$2.00 \$2.25 \$2.75 \$3.50

Acme Nippers	50%
Cronk & Carrier Mfg. Co.:	
American Button	80%
Improved Button	75¢@10%
Cronk's	60%
No. 80 Linemen's	50%
Stub's Pattern	45%
Combination and others	33%

Elmore Tool Mfg. Co.:	
Gas Pliers	70%
Wire and Cutting Pliers	75%
Heller's Farriers' Nippers, Pincers and Tools	40¢@10¢@10%
P. S. & W. Tinner's Cutting Nippers	30%
Utica Drop Forge & Tool Co.:	
Pliers and Nippers, all kinds	40%

Plumbs and Levels—

Chapin-Stephens Co.:	
Plumbs and Levels	30¢@30¢@10%
Chapin's Imp. Brass Cor. 40¢@40¢@10%	
Pocket Level	30¢@30¢@10%
Extension Sights	30¢@30¢@10%
Machinists' Levels	40¢@40¢@10%
Diston & Sons:	
Shafting Levels	60¢@10%
Pocket Levels	60¢@10%
Plumbs and Levels	60¢@10%
Track Level and Gauge	60¢@10%

Points, Glaziers'—

Bulk and 1-lb. papers	1b. 9¢
$\frac{1}{2}$ -lb. papers	1b. 10¢
$\frac{3}{4}$ -lb. papers	1b. 11¢

Police Goods—

Manufacturers' Lists

Polish—Metal, Etc—

Ladd Co.:	
Putzade Liquid, $\frac{1}{2}$ gro., $\frac{1}{4}$ pts., \$12.00; 1 pts., \$20.00; 1 qts., \$40.00.	
$\frac{1}{2}$ doz., $\frac{1}{2}$ gals., \$6.35; 1 gals., \$12.00.	
Prestoline Liquid, No. 1 ($\frac{1}{2}$ pt.), $\frac{1}{2}$ doz., \$5.00; No. 2 (1 qt.), \$9.00.	
Prestoline Paste	40%
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz. boxes, $\frac{1}{2}$ doz., 50¢; $\frac{1}{2}$ gro., \$1.50.	
$\frac{1}{4}$ lb boxes, $\frac{1}{2}$ doz., \$1.25; 1 lb boxes, $\frac{1}{2}$ doz., \$2.25.	
U. S. Liquid, 8 oz. cans, $\frac{1}{2}$ doz., \$1.25.	
Barkeepers' Friend Metal Polish, $\frac{1}{2}$ doz., \$1.75.	

Stove—

Black Eagle Benzine Paste, 5 lb cans, $\frac{1}{2}$ lb 10¢	
Black Eagle, Liquid, $\frac{1}{2}$ pt. cans, $\frac{1}{2}$ doz., 75¢	
Black Jack Paste, $\frac{1}{4}$ lb cans, $\frac{1}{2}$ doz., \$0.50	
Black Kid Paste, 5 lb cans, each, \$0.65	
Ladd's Black Beauty Liquid, per 100 tins	\$6.75
Joseph Dixon, $\frac{1}{2}$ gr. \$5.75	10%
Dixon's Plumbago	$\frac{1}{2}$ lb 8¢
Pireside	$\frac{1}{2}$ gr. \$2.50
Gem, $\frac{1}{2}$ gr. \$1.50	25%
Japanese	$\frac{1}{2}$ gr. \$3.50
Jet Black	$\frac{1}{2}$ gr. \$3.50
Peerless Iron Enamel, 10 oz. cans, $\frac{1}{2}$ doz., \$1.50	

Window Polish—

Benj. P. Forbes:	
Glasbright, 1 lb cans, each	75¢
Glasbright, Factory, 10 lb pails	25¢

Poppers, Corn—

1 qt. Square, doz. \$0.80; gro. \$3.75	
1 qt. Round, doz. \$0.90; gro. \$3.00	
$\frac{1}{2}$ qt. Square, doz. \$1.20; gro. \$3.12	
$\frac{1}{2}$ qt. Square, doz. \$1.50; gro. \$3.15	

Pots, Glue—

Enamelled	30¢@10%
Tinned	30¢@5%

Powder—

Black Sporting:	
Kegs (25 lb.), \$5.00 @ 5.50	
Half Kegs (12½ lb.), \$2.75 @ 3.00	
Quarter Kegs (6¼ lb.), \$1.50 @ 1.65	
Canisters, pounds	25%
Canisters, $\frac{1}{2}$ pounds	15%
Canisters, $\frac{1}{4}$ pounds	12%

NOTE.—Prices vary according to territory.

Presses—

Enterprise Mfg. Co., Fruit, Wine and Jelly	20¢@25%
Lard Presses and Sausage Stuffers	25¢@7½%

Seal Presses—

Morrill's No. 1, $\frac{1}{2}$ doz., \$20.00	50%
Morrill's Pocket, \$20.00	50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail, Etc.—

Elmore Tool Mfg. Co.:	
Drop Forged Tack Claws	50¢@10%
Standard Tack Claws, No. 10	39¢@7½%
Nail Pullers	40%
Miller's Falls, No. 3, $\frac{1}{2}$ doz., \$12.00	33¼@10%
Morrill's No. 1, Nail Puller, $\frac{1}{2}$ doz., \$20.00	50%
Pearson Spike Puller, each, \$15.00	25%
Parrot Tack and Stub Pullers, $\frac{1}{2}$ doz., \$1.20	10%
The Scranton Co. Case Lots:	
No. 2B (large)	\$5.50
No. 3B (small)	\$5.00

Pulleys, Single Wheel—

Inch	1½ 1¼ 2 3
Acting or Tackle, doz.	\$0.30 .45 .60 1.05
Hay Fork, Survival or Solid Eye, doz., 4 in., \$1.25; 5 in., \$1.55	
Inch	2 2¼ 2½ 3
Hot House, doz.	\$0.65 .85 1.20
Inch	1¼ 1½ 1¾ 2
Screw, doz.	\$0.16 .19 .23 .30
Inch	1¼ 1½ 2 2½
Slide, doz.	\$0.25 .40 .55 .65
Inch	1¼ 1½ 2 2½

Sash Pulleys—

Common Frame; Square or Round End, per doz., 1¼ and 2 in.	17¢@20¢
Auger Mortise, no Face Plate, per doz., 1¼ and 2 in.	20¢@24¢
Acme, No. 35, 1¼ in., 19¢; 2 in., 20½¢	
American Pulley Co.:	
Wrought Steel American Plain Axle	50¢@10%
Wrought Steel Eagle, $\frac{1}{2}$ doz., 1¼ in., 17¢; 2 in., 20¢; 2½ in., 24¢	
Top Notch, Electrically Welded, Nos. 3 and 4, doz.	19¢
Common Sash	$\frac{1}{2}$ doz., 20¢
Merit, $\frac{1}{2}$ doz., 2¼ in.	37¢

Fox-All-Steel, Nos. 3 and 7, 2 in.	$\frac{1}{2}$ doz., 50%
Grand Rapids All Steel Noiseless, 50%	
Niagara, No. 35, 1¼ in., 19¢; 2 in., 20½¢	
No. 35 Troy, 1¼ in., 14½¢; 2 in., 16½¢	
Star No. 25, 1¼ in., 19¢; 2 in., 20½¢	
Tackle Blocks—See Blocks.	

Pumps—

Cistern	60%
Pitcher Spout	75¢@10¢@50%
Wood Pumps, Tubing, &c.	50%
Barnes Mfg. Co.:	
Dbl. Acting (low list)	50%
Pitcher Spout	80%
Daisy Spray Pump	$\frac{1}{2}$ doz., \$6.50
Goulds Mfg. Co.:	
Double-Acting Thresher Tank	\$5.00
Diaphragm No. 3, Side Suction, \$14.50	
Empire, Advance, Seneca, D. A. Shallow and Deep Well (low list)	50%
Spraying and Whitewashing	\$2.45
F. E. Myers & Bros. (low lists):	
Double Acting Force and Lift; Cistern and Well; House; Windmill; Ratchet Handle; Pump Stands; Hydro-Pneumatic; Bull-dozing Power; Spray; Ashland Force and Lift	50%
Thresher Tank Myers and Faultless Low Down Tank	\$5.00
Century Low Down Tank, No. 470	\$5.25
Century Low Down Ratchet Handle Tank, No. R470	\$5.50

Pump Attachments—

Chicago Hdw. & Fdy. Pump Spout Attachments, each	\$0.27
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Pump Leathers—

Plunger and Valve Leathers—Per gro.:	
No.	1 2 3 4
	\$5.00 6.00 7.00 8.00
Cup Leathers—Per 100:	
Inch	2½ 3 3½ 4
	\$5.00 7.00 9.00 12.00

Punches—

Saddlers' or Drive, good, doz. 60¢ @ 75¢	
Spring, single tube, good quality (14 tubes)	\$1.75
Revolving (1 tubes)	\$3.50
Remis & Call Co.'s Cast St'l Drive	50%
Elmore Tool Mfg. Co.:	
Machinists' Center	40%
Timers' Solid, 50¢; Prick	50%
Morrill's Nos. 1A, 1A, 1B, 1C, 1D, \$15.00	50%
Hercules, 1 die, each \$5.00	50%
Niagara Hollow Punches	40%
Niagara Solid Punches	55%
Timers' Hollow, P. S. & W. Co. 25¢	
Timers' Solid, P. S. & W. Co. 25¢	
doz., \$1.40	40¢@10%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron, 2¼@2½¢	
Sliding Door, Wrought Brass, 1½ in., lb., 36¢	30%
Cronk's:	
Double Braced Steel Rail, $\frac{1}{2}$ ft. 2¼¢	
O. N. T. Rail	2½¢
Griffin's:	
xxx, $\frac{1}{2}$ 100 ft., 1 x 3-16 in., \$3.25; 1¼ x 3-16 in., \$3.75.	
Hinged Hanger, $\frac{1}{2}$ 100 ft., 1 x 3-16 in., \$3.50; 1¼ x 3-16 in., \$4.00.	
Lane's:	
Hinged Track, $\frac{1}{2}$ 100 ft.	\$3.45
O. N. T. $\frac{1}{2}$ 100 ft., 1 in., \$3.12½; 1¼ in., \$3.45; 1½ in., \$4.00.	
Standard, $\frac{1}{2}$ in.	$\frac{1}{2}$ 100 ft. \$4.00
Lawrence Bros.:	
1 x 3-16 in., $\frac{1}{2}$ 100 ft., \$7.50; 1¼ x 3-16 in., \$8.75	55¢@7½%
Trolley, No. 301, $\frac{1}{2}$ ft.	9¢
McKinney's:	
Hinged Hanger Track, $\frac{1}{2}$ ft., 11¢	
1 x 3-16 Track	60¢@5%
Myers' Stayon Track	60¢@10%
Richards Mfg. Co.:	
Common 1 x 3-16 in., \$3.00; 1¼ x 3-16 in., \$3.25; 1½ x 3-16 in., \$3.50.	
Special Hinged Hanger Rail	60¢@10%
Lag Screw Rail, No. 65	50%
Gauge Trolley Track, $\frac{1}{2}$ ft. No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.	
No. 30, 12¢; No. 31, 14¢; No. 32, 16¢; No. 33, 20¢; No. 34, 24¢; No. 35, 28¢; No. 36, 32¢; No. 37, 36¢; No. 38, 40¢; No. 39, 44¢; No. 40, 48¢; No. 41, 52¢; No. 42, 56¢; No. 43, 60¢; No. 44, 64¢; No. 45, 68¢; No. 46, 72¢; No. 47, 76¢; No. 48, 80¢; No. 49, 84¢; No. 50, 88¢; No. 51, 92¢; No. 52, 96¢; No. 53, 100¢; No. 54, 104¢; No. 55, 108¢; No. 56, 112¢; No. 57, 116¢; No. 58, 120¢; No. 59, 124¢; No. 60, 128¢; No. 61, 132¢; No. 62, 136¢; No. 63, 140¢; No. 64, 144¢; No. 65, 148¢; No. 66, 152¢; No. 67, 156¢; No. 68, 160¢; No. 69, 164¢; No. 70, 168¢; No. 71, 172¢; No. 72, 176¢; No. 73, 180¢; No. 74, 184¢; No. 75, 188¢; No. 76, 192¢; No. 77, 196¢; No. 78, 200¢; No. 79, 204¢; No. 80, 208¢; No. 81, 212¢; No. 82, 216¢; No. 83, 220¢; No. 84, 224¢; No. 85, 228¢; No. 86, 232¢; No. 87, 236¢; No. 88, 240¢; No. 89, 244¢; No. 90, 248¢; No. 91, 252¢; No. 92, 256¢; No. 93, 260¢; No. 94, 264¢; No. 95, 268¢; No. 96, 272¢; No. 97, 276¢; No. 98, 280¢; No. 99, 284¢; No. 100, 288¢.	

Rakes—

Cronk's:	
Steel Garden; Champion, $\frac{1}{2}$ doz., 12-tooth, \$3.75; 14-tooth, \$4.00; 16-tooth, \$4.25; Ideal, $\frac{1}{2}$ doz., 12-tooth, \$3.00; 14-tooth, \$3.30; 16-tooth, \$3.60.	
Victor, 12-tooth, \$2.25; 14-tooth, \$2.50; 16-tooth, \$2.75.	
Queen City Lawn, $\frac{1}{2}$ doz., 20 teeth, \$2.35; 24 teeth, \$2.50.	
Artistic Lawn, $\frac{1}{2}$ doz., \$3.50	
Malleable Garden	70¢@10%
Ideal Steel Garden, $\frac{1}{2}$ doz., 12 teeth, \$13.00; 14, \$16.00; 16, \$18.00	80%
Kohler's:	
Junco Lawn, 35-tooth	$\frac{1}{2}$ doz., \$5.00
Lawn Queen, 20-tooth	$\frac{1}{2}$ doz., \$2.65
Lawn Queen, 24-tooth	$\frac{1}{2}$ doz., \$2.75
Paragon, 20-tooth	$\frac{1}{2}$ doz., \$2.40
Paragon, 24-tooth	$\frac{1}{2}$ doz., \$2.50
Steel Garden, 14-tooth	$\frac{1}{2}$ doz., \$2.40
Malleable Garden, 14-tooth, $\frac{1}{2}$ doz., \$1.75 @ 2.00	

Rasps, Horse—

Disston's	75%
Heller Bros.	70¢@70¢@5%
Livestock Bros.' Gold Medal	70%
McCauley's American Standard	60¢@10¢@5%
New Nicholson	70¢@10¢@75%
See also Files.	

Razors—

W. H. Compton Shear Co.	30%
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Reels, Fishing—

Hendryx:	
M 6, Q 6, A 6, B 6, M 9 1/4, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nieked Populo	20%
Aluminum, German Silvr., Bronze, 1210 N, 121 N	20%
3004 N, 06 N, 6 RM, G 9	20%
1 N, 6 PN, 4 N, 36 PN	20%
2904 P, 33 1/4	2904 PN, 33 1/4
0024 N, 33 1/4	2904 N, 33 1/4
002904 PN, 33 1/4	802 N, 33 1/4
886 PN, 2904 N, 974 PN	25%
5009 PN, 5009 N	20%
Competitor, 102 P, 102 PR, 202 P, 202 P	20%
34 P, 304 PN, 0034 P, 0034 PN, 33 1/4	20%

Rules

Boxwood	60¢/5%
Ivory	25¢/5%

Chapin-Stephens Co.:	
Boxwood	60¢
Flexfold	40¢
Ivory	25¢/25¢/10
Miscellaneous	50¢/50¢/10
Stephens' Combination	55¢
Stationers'	50¢/50¢/10

Kenfelf & Esser Co.:	
Folding, Wood	35¢/10
Folding, Steel	33¢/10

Lufkin's Steel	50¢/10
Lufkin's Lumber	50¢/10
Upson Nut Co.	60¢/5%
Upson Nut Co., Boxwood	60¢/5%

Saws—

Atkins':	
Circular	45¢
Band	50¢/50¢/10
Butcher Saws	50¢
Cross Cuts	35¢
One-Man Cross Cut	50¢
Narrow Cross Cut	40¢
Hand, Rip and Panel	35¢/5
Miter Box and Compass	40¢
Mulay, Mill and Drag	45¢
Wood Saws	40¢/10

Chapin-Stephens Co.:	
Turning Saws and Frames	30¢/30¢/10

Disston's:	
Circular, Solid and Ins'ted Tooth	50¢
Band, 2 to 18 in. wide	60¢
Band, 1/4 to 1 1/2	60¢
Crosscuts	50¢
Narrow Crosscuts	40¢
Mulay, Mill and Drag	40¢
Framed Woodsaws	25¢
Woodsaw Blades	25¢
Woodsaw Rods, Tinned	15¢
Hand Saws, Nos. 12, 99, 9, 16, 4100	25¢
D8, 120, 16, 17, 8	25¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1	30¢
0, 00, Combination	25¢
Compass, Key Hole, &c.	25¢
Hand Ice Saws	45¢
Butcher Saws and Blades	30¢

C. E. Jennings & Co.'s:	
Back Saws	16¢
Butcher Saws	25¢/7 1/2
Compass and Key Hole	25¢/7 1/2

Framed Wood Saws	23¢/7 1/2
Hand Saws	12¢
Wood Saw Blades	33¢/7 1/2

Millers Falls:	
Butcher Saws	15¢/10
Star Saw Blades	15¢/10

Massachusetts Saw Works:	
Victor Kitchen Saws	40¢/10/50
Butcher Saws and Blades	35¢/40
Peace & Richardson's Hand Saws	30¢

Simonds':	
Circular Saws	45¢
Crescent Ground Cross Cut Saws	30¢
One-Man Cross Cuts	40¢/10
Gang Mill, Mulay and Drag Saws	40¢
Hand Saws	25¢/25¢/7 1/2
Butcher Saws	35¢/35¢/7 1/2
Hand Saws	25¢/25¢/7 1/2
Hand Saws, Bay State Brand	45¢
Compass, Key Hole, &c.	25¢/25¢/7 1/2
Wood Saws	40¢/7 1/2

Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws	50¢
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Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A	40¢
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Disston's:	
Concave Blades	25¢
Chromol Blades	35¢
Hack Saw Frames	30¢

Simonds, 35%; Bay State, 40%;	
Culley	35¢

C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40¢/7 1/2

Hack Saws, Nos. 175, 180, complete	40¢/7 1/2
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Goodell's Hack Saw Blades	40¢/10
Griffin's Hack Saw Frames	35¢/5/10
Griffin's Hack Saw Blades	35¢/5/10
Star Hack Saws and Blades	15¢/10
Sterling Hack Saw Blades	30¢/10/5
Sterling Hack Saw Frames	30¢/10/10
Sterling Power Hack Saw Machines	each, No. 1, \$25.00; No. 2, \$30.00; 10¢
Victor Hack Saw Blades	20¢
Victor Hack Saw Frames	40¢
Victor Hack Saw Machines	each, \$75.00

Scroll—

Barnes No. 7, \$15.	25¢
Barnes' Scroll Saw Blades	40¢

Barnes' Velocipede Power Scroll Saw	without boring attachment, \$18.
with boring attachment	\$20.

Master, complete	\$10.00 and 15¢/10
Rogers, complete	\$3.50 and \$4.00.
	15¢/10

Scales—

Union Platform, Plain	\$2.10 @ 2.20
Union Platform, Stpd.	\$2.20 @ 2.30

Chatillon's:	
Eureka	25¢
Favorite	40¢
Grocers' Trip Scales	50¢

Reading Hardware Co.	50¢/5
The Standard Portable	40¢
The Standard R. R. and Wag-	

Scrapers—

Chapin-Stephens Co., Box	30¢/30¢/10
Richards Mfg. Co., Foot	60¢

Screws—Bench and Hand

Bench, Iron, doz., 1 in., \$2.50 @	
2 1/2; 1 1/2, \$3.00 @ 3.25; 1 1/4,	
\$3.50 @ 3.75	

Bench, Wood	20¢/20¢/10
Hand, Wood	70¢/10¢/70¢/10¢/10

Chapin-Stephens Co., Hand	70¢/10¢/10¢/2 1/2
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Coach, Lag and Hand Rail—

Lag, Cone Point	75¢/10¢/5
Coach, Gimlet Point	75¢/10
Hand Rail	70¢/10¢/75

Jack Screws—

Standard List	70¢/10¢/75
Millers Falls	50¢/10¢/10

Machine—

Cut Tread, Iron, Brass or	
Bronze:	

Flat Head or Round Head,	
50¢/10¢/10	

Fillister Head	40¢/10¢/10
Roller Thread, F. H. or R. H.	
Iron	75¢/10
F. H. or R. H., Brass, Nos.	
8 to 14	65¢/10

Set and Cap—

Set (Iron)	75¢/10¢/7 1/2
Set (Steel), not advance over	
Iron	25¢
Sq. Hd. Cap	70¢/10¢/7 1/2
Hex. Hd. Cap	70¢/10¢/7 1/2
Rd. Hd. Cap	50¢/7 1/2
Fillister Hd. Cap	60¢/7 1/2

Wood—

List July 23, 1903.

Flat Head, Iron	87¢/45¢/10
Round Head, Iron	85¢/50
Flat Head, Brass	80¢/50
Round Head, Brass	77¢/50
Flat Head, Bronze	75¢/50
Round Head, Bronze	72¢/50
Drive Screws	87¢/45¢/10

Scythes—

Per doz.

Plata Grass, Cutting Edge Pol-	
ished	\$6.25 @ \$6.50
Clipper, Bronzed Web	\$6.50 @ \$6.75
Solid Steel, Web and Backs Pol-	
ished	\$7.00 @ \$7.25
Bush, Weed and Bramble	
Painted	\$6.50 @ \$6.75
Grain, Painted, Cutting Edge	
Polished	\$8.25 @ \$8.50
Clipper Grain, Bronze Web	
	\$8.50 @ \$8.75

Seeders, Raisin—

Enterprise	25¢/30
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Sets—Awl and Tool—

Fray's Hollow Tool Handles, Nos. 1,	
\$12; 2, \$18; 3, \$12.	50¢
Millers Falls Adl. Tool Handles, No.	
1, \$12; No. 4, \$12; No. 5, \$18.	20¢/10

Sets, Nail—

Octagon	gro. 45¢ @ 50¢/3 1/2
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Huck Bros.	25¢
Ensign Tool Mfg. Co.	30¢
Mayhew's	\$1.00 @ \$2.00
Snell's Corrugated, Cup Pt.	10¢/10
Snell's Knurled, Cup Pt.	40¢/10
Victor Knurled, Cup Pt.	\$7.50

Rivet—

Regular List	75¢/75¢/10
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Saw—

Atkins':	
Criterion	40¢
Adjustable	40¢

Disston's Star, Monarch and Tri-	
umph	30¢
Giant Royal Cross Cut	\$9 doz. \$6.00

Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$20.00
No. 5, Mill	\$30.00
Nos. 10, 11, 95	\$15.00
No. 1 Old Style	\$10.00
Special	\$16.25

Royal, Hand	\$9 doz. \$3.50
Seymour Smith & Son's	65¢
Taintor Positive	\$9 doz. \$6.75

Sharpeners, Knife—

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones,	
\$9 doz.	\$1.50
Mounted Kitchen Sand Stone,	
\$9 doz.	\$1.50
Ensign's Grip Carving Knife	30¢
Hones, \$9 doz.	\$3.00
Quick Cut Emery Carving	
Knife Hones, \$9 doz.	\$1.50
Quick Edge Pocket Knife	
Hones, \$9 doz.	\$2.50

Lawn Mower—

Pike Mfg. Co., 12, 14, 16, 18 and 20	
in. doz.	\$8.00
	35¢/4

Shavers, Beef—

Enterprise Mfg. Co.	25¢/30
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Shaves, Spoke—

Iron	doz. \$1.25
Wood	doz. \$2.00

Chapin-Stephens Co.	30¢/30¢/10
Millers Falls Co.	\$9.00, 15¢/10
Seymour Smith & Son's	70¢

Shears—

Cast Iron	7	8	9 in.
Best	\$16.00	18.00	20.00 gro.
Good	\$13.00	15.00	17.00 gro.
Cheap	\$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:	
Best quality Jap.	70¢/10¢/5
Best Quality Nickel	60¢/10¢/5
Tailors' Shears	40¢/10¢/10

Acme Cast Shears	40¢
Columbian Cutlery Co.:	
Sheep, 1900 list	30¢/10¢/5
Grass	50¢/10
Horse or Mule	50¢/10

W. H. Compton Shear Co.:	
Japan Handles, Nickel Blades	60¢/10¢/5
Full Nickel	50¢/10¢/5
Tailors'	30¢

J. Wiss & Sons Co.:	
Best Quality Jap'd	50¢/10
Best Quality Nickelled	50¢/10
Tailors'	25¢

Tinners' Snips—

Steel Blades	20¢/5 @ 20¢/10
Steel Laid Blades	50¢/10

Acme Cast Snips	40¢
W. H. Compton Shear Co., Forged	
Steel Handles	35¢
Jennings & Griffin Mfg. Co., 6 1/2 to	
10 in.	33¢/7 1/2
Niagara Snips	40¢
P. S. & W. Forged Handles	25¢
Forged Handles, Steel Blades	
Samson	40¢/10¢/5
Triumph Store Pipe, doz.	\$6.00
J. Wiss & Sons Co.:	
Wiss Forged Steel	25¢

Pruning Shears—

Columbian Cutlery Co.:	
Hedge, Wilent Brand	60¢/10
Lawn and Border, Wilent Brand	60¢/10

W. H. Compton Shear Co., Dropped	
Forged Steel	35¢
Cronk's Hand Shears	33 1/2
Cronk's Wood Handle Shears	33 1/2
Disston's Combined Pruning Hook	
and Saw, doz.	\$18.00
Disston's Pruning Hook only	25¢
doz.	\$12.00
J. T. Henry Mfg. Co.:	
Pruning Shears, all grades	40¢
P. S. & W. Co.	40¢
Seymour Smith & Son's:	
Hand Shears	70¢
Standard Tree Pruners	75¢/10
Wood Handle Pruning Shears	40¢

Sheaves—Sliding Door—

Reading	40¢
R. & E. list	15¢

Sliding Shutter—

Reading list	40¢
R. & E. list	15¢

Shells—Empty—

Brass Shells, Empty:	
Climax, 10 and 12 gauge	60¢/5
Club, Rival, 65¢/5; First Quality,	
60¢/5	

Paper Shells, Empty:	
New Rapid, 10, 12, 16 and 20 gauge,	
15¢	

Climax, 10 and 12 gauge; Arrow,	
10, 12, 16 and 20 gauge; Knicker,	
grade	50¢/5
New Club, 10 and 12 gauge, Rival	
Grade	50¢/5
New Climax, Defiance, 10, 12, 14,	
16 and 20 gauge; Climax, 14,	
16 and 20 gauge; Climax, 14,	
20	
Nitro Club, 10, 12, 16 and 20 gauge;	
New Club, 14, 16 and 20 gauge;	
Repeater Grade	20¢

Shells, Loaded—

Loaded with Black Powder	40¢
Loaded with Smokeless Powder,	
medium grade	40¢/5
Loaded with Smokeless Powder,	
high grade	40¢/10/10

Union Metallic Cartridge Co.:	
New Club, Black Powders	40¢
Nitro Club, Smokeless Powders	40¢/5
Arrow, Smokeless Powders	40¢/10/10
Winchester:	
Smokeless Repeater Grade	40¢/5
Smokeless Leader Grade	40¢/10/10
Black Powder	40¢

Shingles, Metal—Per Sq.

Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$1.05
Dixie, 10 x 14 in.	4.25
Dixie, 7 x 10 in.	5.25
	6.70

Shoes, Horse, Mule, &c.—

F. & B. Pittsburgh:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90

Shot—

Drop, up to B.	25-lb. bag.
Drop, B and larger	\$1.70
Back	1.95
Chilled	1.85
Dust	2.30

Shovels and Spades—

Association List	40¢/7 1/2 @ 40¢/10
Avery Stamping Co.	40¢

Snow Shovels—

Long Handle	\$2.50 @ \$2.75
Wood and Mall, D Handle	
	\$2.65 @ \$2.90

Stocks and Dies—

Blacksmiths'.....	50@50&10%
Curtis Revolver Hatchet Die Stock.....	25
Derby Screw Plates.....	25
Green River.....	25
Lightning Screw Plate.....	25
Little Giant.....	25
Reece's New Screw Plate.....	25

Stoners, Cherry—

Enterprise.....	25@30%
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Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds).....	33&1/2%
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Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies.....	40%
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Stones, Oil, &c.—

Pike Mfg. Co., 1907 list:.....	30 D
Arkansas St. No. 1, 3 to 5 1/2 in.....	\$2.80
Arkansas St. No. 1, 5 1/2 to 8 in.....	\$3.50
Arkansas Slips No. 1.....	\$4.00
Lily White Washita, 4 to 8 in.....	\$6.00
Rosy Red Washita, 4 to 8 in.....	\$6.00
Washita St., Extra, 4 to 8 in.....	\$6.00
Washita St., No. 1, 4 to 8 in.....	\$6.00
Washita St. No. 2, 4 to 8 in.....	\$6.00
Lily White Slips.....	\$6.00
Rosy Red Slips.....	\$6.00
Washita Slips, Extra.....	\$6.00
Washita Slips, No. 1.....	\$6.00
Washita Slips, No. 2.....	\$6.00
India Oil Stones (entire list).....	33&1/2%
Quickcut Emery and Corundum Oil Stone, Double Grit.....	40%
Quickcut Emery and Corundum Oil Stone, Single Grit.....	40%
Quickcut Emery Rubbing Brick.....	40%
Hindustan No. 1, R's lar.....	8¢
Hindustan No. 1, Small.....	10¢
Turkey Oil Stones, Extra, 5 to 8 in.....	8¢
Queer Creek Stones, 4 to 8 in.....	8¢
Queer Creek Slips.....	8¢
Sand Stone.....	6¢

Scythe Stones—

Pike Mfg. Co., 1907 list:.....	30 D
Black Diamond S. S.....	gro. \$12.00
Lamotte S. S.....	gro. \$11.00
White Mountain S. S.....	gro. \$9.50
Green Mountain S. S.....	gro. \$7.00
Extra Indian Pond S. S.....	gro. \$8.00
No. 1 Indian Pond S. S.....	gro. \$7.50
No. 2 Indian Pond S. S.....	gro. \$5.00
Lender Red End S. S.....	gro. \$5.00
Quick Cut Emery.....	gro. \$10.00
Pure Corundum.....	gro. \$18.00
Crescent.....	\$7.00
Emery Scythe Rifles, 2 Coat.....	\$8.80
Emery Scythe Rifles, 3 Coat.....	\$11.00
Emery Scythe Rifles, 4 Coat.....	\$13.20
Balance of 1907 list.....	33&1/2%
Lighting (Artificial).....	gro. \$12.00
Lighting (Artificial).....	gro. \$18.00

Stoppers, Bottle—

Victor Bottle Stoppers.....	30 gro. \$9.00
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Stops—Bench—

Millers Falls.....	15&10%
Morrill's, No. 1, 10 doz.....	\$10.00
Morrill's, No. 2, 10 doz.....	\$12.50
Seymour Smith & Son's.....	80%

Door—

Chapin-Stevens Co.....	50@50&10%
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Plane—

Chapin-Stevens Co.....	20%
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Straps—Box—

Acme Embossed, case lots.....	20&10&10%
Cary's Universal, case lots.....	20&10&10%

Stoppers, Razor—

Pullman Safety Razor Blade, doz.....	\$3.50
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Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Frames.....	25@25&7 1/2%
P. S. & W. Co.....	40&10&5%

Swings, Lawn—

Myers' Low Down Roller.....	\$6.25
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Tacks, Finishing Nails, &c.—

American Carpet Tacks.....	30&25@—%
American Cut Tacks.....	30&25@—%
Suedes' Upholsters.....	30&25@—%
Gimp Tacks.....	30&25@—%
Loose Tacks.....	30&25@—%
Trimmers' Tacks.....	30&25@—%
Looking Glass Tacks.....	65¢
Bull Posters and Railroad Tacks.....	90&10¢
Hungarian Nails.....	80¢
Finishing Nails.....	70¢
Trunk and Clout Nails.....	75¢

NOTE—The above prices are for straight weights
See also Nails, Wire.

Double Pointed—

Double Pointed Tacks.....	90&6 tens@—%
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Tapes, Measuring—

American Asas' Skin.....	50¢
Patent Leather.....	25@30&5%
Steel.....	33 1/4¢
Chesterman's.....	25@25&5%
Keuffel & Esser Co.:.....	
Favorite, Am Sk.....	40&10@50%
Favorite, Duck and Leather.....	25&5@25&10%
Metallic and Steel, lower list.....	35¢
35&5%; Pocket, 35&5&5%.....	

Luffkins:	
Asses' Skin.....	40&10@50%
Metallic.....	30@30&5%
Patent Bend, Leather.....	25&5@25&10%
Pocket.....	40@40&5%
Steel.....	33 1/4¢
Wichsch & Hilger:	
Chesterman's Metallic, No. 3ML.....	25%
etc.....	25%
Chesterman's Steel, No. 10381.....	35%
etc.....	35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 3/4-inch and larger per 100 lb.....	\$2.55 @ \$2.80
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Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.....	30@35%
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Ties, Bale—Steel Wire—

Single Loop.....	82&10%
Monitor, Cross Head, &c.....	70&2 1/2%

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.	
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Tops, Chimney—

Iwan Volcano Chimney Tops.....	55%
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Tools—Coopers'—

L. & I. J. White.....	20@20&5%
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Ice Tools—

Gifford-Wood Co.....	15%
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Saw—

Atkins' Cross Cut Saw Tools.....	35%
Simond's Improved.....	33 1/2%
Simond's Crescent.....	30%

Ship—

L. & I. J. White.....	25%
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Torches—

Hammers, Engine, 10 doz.....	\$1.50
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Traps—Fly—

Balloon, Globe or Acme, doz.....	\$1.15 @ \$1.25
Harper, Champion or Paragon, doz.....	\$1.25 @ \$1.40
gro.....	\$13.00 @ \$13.50

Game—

Imitation Oneida.....	75@10%
Newhouse.....	50&5%
Hawley & Norton.....	65&10%
Victor.....	75@75&10%
Oneida Community Jump.....	70&5%
Stop Thief.....	60%
Tree Trap.....	60%
Hector.....	75@75&5%

Mouse and Rat—

Mouse, Wood, Choker, doz, holes.....	12¢
Mouse, Round or Square Wire, doz.....	85@90¢

Trowels—

Disston Brick and Pointing.....	25%
Disston Plastering.....	20%
Disston "Standard Brand" and Garden Trowels.....	30%
Kohler's Steel Garden Trowels, 10 gro.....	\$4.50
5 in. 4.50; 6 in. \$6.00	
Never-Break, Forged Steel Garden Trowels, in 1 doz, boxes.....	\$7.00 \$8.50
Woodrough & McFarlin, Plastering.....	25%

Trucks, Warehouse, &c.—

McKinney Trucks.....each, net \$10.00	
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Tubs, Wash—

Net, per gross.....	
No. 0 1 2 3	
Galvanized.....	\$29.00 \$38.00 55.00 62.00

Twine, Miscellaneous—

Flax Twine:	
No. 9, 1/4 and 1/2-lb. Balls.....	21 @ 25¢
No. 12, 1/4 and 1/2-lb. Balls.....	19 @ 21¢
No. 18, 1/4 and 1/2-lb. Balls.....	16 @ 18¢
No. 24, 1/4 and 1/2-lb. Balls.....	15 1/2 @ 17 1/2¢
No. 36, 1/4 and 1/2-lb. Balls.....	15 @ 17¢
Chalk Line, Cotton 1/4-lb. Balls.....	24 @ 29¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....	8 1/2 @ 21¢
Cotton Wrapping, 5 Balls to lb. according to quality.....	13 1/2 @ 21¢
American 3-Ply Hemp, 1, and 1 1/2-lb. Balls.....	12 1/2 @ 15¢
American 3-Ply Hemp, 1-lb. Balls.....	13 1/4 @ 16¢
India 3-Ply Hemp, 1 1/2-lb. Balls.....	7 1/2 @ 9¢
India 3-Ply Hemp, 1-lb. Balls.....	7 @ 8 1/4¢
2, 3, 4 and 5-Ply Jute, 1 1/2-lb. Balls.....	9 @ 11¢
Mason Line, Linen 1/4-lb. Balls.....	17¢
No. 263 Mattress, 1/4 and 1/2 lb. Balls, according to quality.....	30 @ 60¢
Wool, 3 to 6 ply.....	B 6¢; A 7 1/4¢

Vises—

Solid Box.....	50@60&10%
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Parallel—

Fisher & Norris Double Screw Leg, each, Nos. 2, \$10.50; 3, \$16.00; 4, \$20.50; 5, \$27.00; 6, \$32.00.....	20%
Fisher-Brooks Bench and Wood-workers' Vises, No. 0, \$3.00; No. 1, \$5.90; No. 2, \$8.25; No. 3, \$10.50; No. 4, \$13.50.....	80%
Merrill's.....	25%
Millers Falls Oval Slide Pattern.....	60&10%
Parker's:	
Victor, 20@25%; Regulars.....	20@25%
Victor's.....	40@45%
Combination Pipe.....	55@60%
Prentiss Vise Co.:	
Patent, Bicycle, Shepard, Gipsy, Adj. Column, Lewis Adj. Jaw.....	25%
Rapid Transit, Heavy Chipping.....	30%
Bull Dog, Anchor Line, Yankee Quick Lever, Lewis Solid Jaw, Eclipse Wrench Attachment.....	40%
Monarch.....	45%
Vise Jaw C's.....	10%
Pullman Automatic Bench, 1 doz., No. 1, \$7.50; No. 2.....	\$9.50

Pipe—

Curtis & Curtis Malleable.....	25%
Parker's Combination:	
87 Series, 60%; 187 Series, 60&5%; No. 870, 10%.....	50&10%
Prentiss Vise Co.:	
Blake Combination, Prentiss Combination, Prentiss Combination, Malleable; Monarch Combination.....	65%
Rex Combination.....	70%
Peerless Pipe Grip.....	25%

Saw Filers

Disston's 13 Clamp and Guide, 1 doz., \$24.00, 30%; Clamps.....	30%
Reading.....	50&10%

Wood Workers—

Prentiss Cabinet Makers.....	40%
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.	

Wads—Price per M.

B. E., 11 up.....	80¢
B. E., 9 and 10.....	70¢
B. E., 8.....	80¢
B. E., 7.....	80¢
P. E., 11 up.....	\$1.00
P. E., 9 and 10.....	1.25
P. E., 8.....	1.50
P. E., 7.....	1.50
Ely's B. E., 11 and larger.....	\$1.70 @ \$1.75
Ely's P. E., 12 to 20.....	\$3.00 @ \$3.25

Ware, Hollow—

Cast Iron, Hollow—	
Enameled.....	45&10%
Ground.....	50&5%
Plain or Unglazed.....	60%
Country Hollow Ware, per 100 lbs.....	\$2.75 @ \$3.00
White Enameled Ware:	
Maslin Kettles.....	65&10%
Covered Wares:	
Tinned and Turned.....	35&10%
Enameled.....	45&10%
See also Pots, Glue.	

Enameled—

Agate Nickel Steel Ware.....	33 1/4%
El-anage.....	60&10%
Iron Clad Ware.....	70&10%
Lava and Volcanic, Enameled.....	10&10%

Tea Kettles—

Galvanized Tea Kettles:	
1/2 inch.....	6 8 9
Each.....	45¢ 50¢ 55¢ 65¢

Steel Hollow Ware—

Avery Stamping Co.:	
Never-Break Spiders and Grid-dies.....	65&10%
Steel Kettles, Maslin Scotch Bowls.....	60%
Steel Stew Pans, Stew Pots, etc.....	50%
Porcelainized.....	50%
Cleveland Stamping & Tool Co.:	
Solid Steel Spiders and Grid-dies.....	65&5%
Solid Steel Kettles.....	60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone.....	40@40&10%
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Washboards—

No. 800—Brass King, Single Surface, Open Back.....	\$3.00
801—Brass King, Single Surface, Open Back.....	\$2.50
802—Brass Junior, Single Surface, Open Back.....	\$2.25
862—White Hen, Spiral Crimp Glass.....	\$3.15
904—Royal Blue Enamel Single Surface, Ventilated Back.....	\$3.25
172—Our Best, Single Zinc, Soap Drainer.....	\$3.25
722—Soap Saver, Single Zinc, Iron Top.....	\$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back.....	\$3.00
134—Universal, Single Zinc, Extra Family Size Ventilated Back.....	\$2.80
718—Regal, Single Zinc, Extra Family Size Ventilated Back, Swing Protector.....	\$2.50
760—Banner Globe, Single Zinc, Ventilated Back.....	\$2.25
75—Peerless, Double Zinc, Spring Protector.....	\$3.70
56—Red Cross, Double Zinc, Swing Protector.....	\$3.60
14—North Star, Solid Zinc, Swing Protector.....	\$3.60
797—Jewel, Single Zinc, Pail Size.....	\$1.25

Washers—Leather, Axle—

Solid.....	90@90&10%
Patent.....	90@90&5%
Coll: 1/4 1 1 1/4 1 1/2 inch.....	9¢ 10¢ 11¢ 14¢ per box.

Iron or Steel—

Size bolt.....	6-16 3/4 1/2 3/4 3/4
Washers.....	\$1.90 4.00 2.70 2.50 2.30

The above prices are based on \$6.50 off list.
In lots less than one keg add 1/2¢ per lb.; 5-lb. boxes add 1/4¢ to list.

Avery Stamping Co.:	
Standard, in 200 lb kegs, \$6.00 100 lb. dist.; in 100 lb kegs, add 10¢ net 100 lb; in 5 or 10 lb boxes, add 50¢ net 100 lb; in 1 lb boxes, add \$1.00 net 100 lb.	

Cast Washers—

Over 1/2-inch, barrel lots.....	per lb. 1 1/2 @ 1 1/4¢
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Wedges—

Oil Finish.....	1b., 2 1/4 @ 2 1/4¢
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Weights—Hitching—

Covert Mfg. Co.....	25%
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Sash—

Per net ton, Eastern market.....	\$25.00 @ 1—
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Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65% Emery.....	75%
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Well—

8-in., \$2.00; 10-in., \$2.30; 12-in., \$3.00; 14-in., \$4.45.	
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Wire and Wire Goods—

Market and Stone Wire in Bundles—	
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Bright and Annealed:	
9 and coarser.....	80%
10 to 18.....	80&10%
19 to 26.....	80&10&2 1/2%
27 to 36.....	80&5%

Galvanized:	
9 and coarser.....	75&10%
10 to 16.....	75&10%
17 to 26.....	72&10%
27 to 36.....	72&1/2%

Coppered:	
9 and coarser.....	75&1

